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Principles of Microeconomics

Anthony J. Cataldo II

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Professor Cataldo is the author of ***THE CANNABIS REPORT*** on ***INVESTORS HUB (IHUB)*** & a frequent contributor to ***SEEKING ALPHA***.

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ABOUT THE AUTHOR

A.J. Cataldo has worked in public accounting, internal and government auditing (California Auditor General), chief financial officer/controller, and provided expert testimony in business litigation engagements involving GM, Ford, Chrysler, Toyota, Nissan and other automobile manufacturers, testifying in Nevada, California, Texas, and Arizona. His 10 books include 3 Elsevier Science, scholarly monographs, and some of his 200+ articles have appeared in *Journal of Accountancy, National Tax Journal, Research in Accounting Regulation, Journal of Forensic Accounting, Accounting Historians Journal*, and *Seeking Alpha*. The *Securities and Exchange Commission* has filed some of these publications in Court Proceedings. A very recent publication (2015) won a *Best Paper* award at a conference (2014). He has served as an external reviewer for promotion and tenure and/or dissertation candidates, both domestically and internationally (e.g., U.S., Malaysia and Australia). He continues to serve on editorial review boards for IMA association journals (and others) for 25+ years, the former, including *Management Accounting, Strategic Finance*, and *Management Accounting Quarterly,* (1990-) and the *ATA Journal of Legal Tax Research* (2010-). Presently, he teaches financial accounting, at all levels and cost accounting at the MBA level. Previously, he taught managerial and cost accounting, at all levels. He has also taught micro- and macro-economics, corporate finance, and business statistics courses and authored study guides on these and other business topics.

Additional information and other publications are available on ***LinkedIn***, ***Google Scholar***, ***Seeking Alpha***, and ***THE CANNABIS REPORT*** for ***IHUB***. Professor Cataldo is also the author of ***Introduction to Financial Accounting (2nd Edition)***, ***Managerial Accounting (2nd Edition)***, and ***Marijuana Stocks***.

PREFACE

This text covers the material required in an introductory microeconomics or principles of microeconomics course. I have taught microeconomics and macroeconomics thirteen times over the years (1983-), and been hired for what is referred to as a "work-for-hire" projects to write study guides and/or online courses on these topics in more recent years.

This text coverage and course coverage is required for all business degree undergraduates. I would expect this text to have a 20-year shelf life.

My objective is to make this material available to students at a very low cost. This is a first edition and I will use feedback from this first edition to "continuously improve" and write a second edition at some future date.

I hope you are supportive of my efforts. My next project with be a text on macroeconomics or principles of macroeconomics. If you believe this text is effectively priced and "adds value," please "spread the word" through social media. I do not carry a cell phone, do not text message, and have never used Facebook, so I do not, presently, possess social media marketing skills.

PS: There is in excellent set of YouTube videos for Economics: Crash Course that I highly recommend as a supplement to this text and any introductory economics courses you might be taking.

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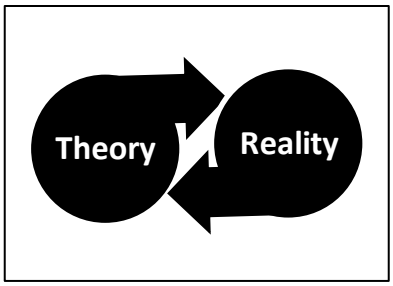
Chapter 1
The Study of Economics

Learning Objectives

- Define or describe the terms: hypothesis, theory, and model, and how these terms are related
- Define and distinguish between natural experiments and random experiments.
- Describe scarcity and define opportunity cost
- Define economics and distinguish between microeconomics and macroeconomics
- Describe the relationship between supply and demand
- Define and distinguish between a price ceiling and a price floor
- Define and describe comparative advantage
- Explain how voluntary exchange and trade results in mutual gains
- Explain how marginal analysis might assist decision-making for a public policy issue like smoking
- Define externalities and social costs
- Describe the trade-offs between efficiency and equality in the context of wealth redistribution

Economics is the disciplined study of the behaviors of individuals or households and firms or governments. You will notice, as your progress through this text, that economics generalizes or examines topics in an abstract form and through the use of hypotheses, theories, and models.

A hypothesis can be characterized as a reasoned guess. A theory is a characterization or generalization or simplification or abstraction of an observed phenomenon. Theories are explained or examined within a framework designed to facilitate problem definition, problem-solving, problem analysis, and problem solutions or conclusions, usually within the form or framework of theoretical models. The models contain variables that may change from time to time and from observation to observation.



Sometimes, when studying an issue of importance, there is a correlation between to events, presumed to be causally linked. Models and theories assist economists and other social scientists in avoiding the incorrect linkage between non-causally related but correlated events. Oakham's razor promotes the principle that irrelevant details or variables should be excluded from consideration and ***certeris paribus***, or all else being equal, or all else remaining constant, are terms used to describe the examination of and focus on two variables while all other variables are held constant and remain unchanged.

For example, the increase in the stock market over a month might be highly correlated with the temperatures, over the same period, in Los Angeles, California, but no one would suggest that these events are causally linked. Alternatively, if interest rates declined over this same month when the stock market increased, one might find it intuitively appealing and founded in existing economic theory and models that a lower return in the form of interest on debt has led some investors, at the margin, to seek higher returns by investing in equity securities.

Causation and correlation is not the same thing. Economic models assist us in our examination of a variety of complex issues in a simplified economic framework. An economic model, therefore, represents a disciplined representation of a theory or portion of a theory used to increase our understanding of the world and cause and effect. Empirical economics collects data for use in testing theories.

Natural & Random Experiments

The scientific approach to problem-solving, in economics, includes random experiments and natural experiments, where the former represents a technique in which outcomes are examined via use of a randomly selected subset to compare outcomes from exposed and control groups, and the latter examines interactions with exogenous events outside of and unrelated to the experiment.

Scarcity & Opportunity Cost

Economic resources are scarce. Stated, alternatively, no one has unlimited economic resources.

Scarcity or less than unlimited resources force consumers, firms and governments to make choices between alternatives. The cost of the highest valued alternative benefit forgone is referred to as an opportunity cost.

The classic example of an opportunity cost is that of [1] attending college or [2] working full-time. You are attending college to earn a degree. You are anticipating a higher post-graduation salary and/or a better life after graduation. However, the cost of this decision or lost opportunity or opportunity cost is the higher earnings that you would enjoy were you to, instead, devote this time, effort and energy earning a higher salary, and without a college education, in the near-term or short-run.

Microeconomics & Macroeconomics

Economics is the study of how individuals and societies choose to allocate scarce resources. Microeconomics focuses on the behaviors of firms and households. Macroeconomics focuses on aggregates in the contest of income, employment, output, and so on, but on a national or international scale or level.

Positive economics is non-judgmental; normative economics evaluates economic makes value judgments and examines and characterizes economic behavior as good or bad. These value judgments involve the examination of fairness or equity, which should not be confused with efficiency, where an efficient system produces what people want at the lowest possible cost.

Supply & Demand

When a commodity is scarce or in short supply, its price level tends to rise. Alternatively, when supplies are abundant, price levels tend to decline.

These laws of supply and demand can be thwarted through the man-made imposition of price ceilings and price floors, where the former tend to reduce the supply of the commodity and the latter tends to increase the supply of the commodity. In both cases, these ceilings and floors distort natural market mechanisms that might otherwise allow the market to adjust supply and demand levels based on actual needs or consumption.

Comparative Advantage

The law of comparative advantage has led to the outsourcing of manufacturing from the U.S. to China and relatively low labor cost countries. If the hourly labor rate for manufacturing is lower for manufacturing in China, China is said to have a comparative advantage with respect to manufacturing labor cost.

U.S. citizens, in the above case, benefit from a lower cost of Chinese labor when they purchase manufactured goods from China, but they also pay a price. The manufacturing jobs that might otherwise be available in the U.S. have been outsourced to China or some other relatively lower labor cost competitor nation.

Mutual Gains from Voluntary Exchange & Trade

As a consumer, you want to spend your limited or scarce economic resources cost-effectively, where you receive the greatest possible utility at the lowest possible cost. It is for this reason that you might prefer to purchase a good manufactured in China, perhaps due to a lower cost, when compared to a comparable product, but at a higher price, though manufactured in the U.S.

The consumer benefits by being able to consume more at a lower price, but the displaced U.S. laborer from the manufacturing sector or segment of the U.S. economy loses his or her job to an overseas competitor. We could, as a nation, decide to engage in some form of protectionism for each industry where we do not enjoy a comparative advantage, however, the mutual gains otherwise made available to the consumer through this competitive voluntary exchange and trade would be lost.

The U.S. manufacturer, in the interim, can re-enter this market, if and when the U.S. develops more efficient manufacturing processes or can reduce labor costs to a more competitive level. At that time, the manufacturing jobs lost to China or another competitor return to the U.S.

Decision-Making Focused on and at the Margin

Marginal analysis is used by economists to study and forecast decision-making. For example, in increase in the excise tax added to the cost of tobacco is likely to reduce the number of smokers, but by how many, at the margin? Certainly, it is intuitively appealing to anticipate that a larger tax increase would lead to a larger number of non-smokers, but economist attempt to develop quantitative formulas and predictive models to determine a most likely point estimate or range likely to result at varying levels of increased taxation.

Externalities Requiring Regulatory Intervention or Cure

Social costs are characterized as externalities. For example, a firm will profit-maximize, but, perhaps to the extent that they fail to control for the pollution they cause or create. In these cases the market mechanism cannot correct for the negative impact of these social costs and a regulatory intervention or cure must be established and maintained.

Trade-Offs between Efficiency & Equality

Income inequality has increased in the U.S. in recent decades. Growing income inequality has led to news and media stories and complaints about “the top 1 percent” and what might be best characterized as “class warfare” and warranting the redistribution of wealth, at least at some level. While the U.S. system maximizes efficiency and output, it has not resolved issues of poverty or produced a system of equality.

Economic growth and economic stability are presumed to be desirable, in the study of economics, where the former is defined as the total output of an economy and the latter represents a condition

where national output is growing steadily, with low inflation and the full employment/deployment of scarce economic resources.

Summary

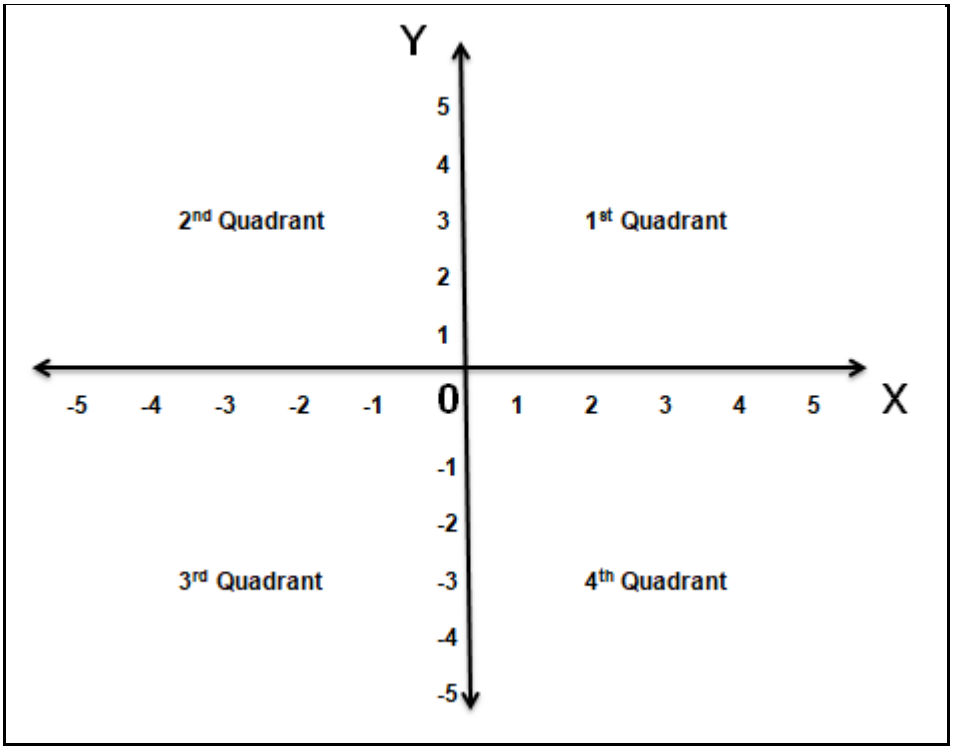
While economists are social scientists, they are also people, and people are biased. It is not uncommon for an economist to align himself or herself with an ideology or political party, so, as a consumer of economic information you must develop a basic understanding and maintain the tools necessary to allow you to be an intelligent consumer of economic information. This text and related coursework in micro-economics will provide you with the foundation to achieve this objective.

Appendix A
Basic Charts & Graphics

Economists use graphs or graphics to explain and analyze theories and models. They visually depict relations between variables of interest when framing a problem and/or solution. This appendix to Chapter 1 describes and illustrates some of the basic graphs and graphics used by economists. They include

1. Straight-line or linear graphs
2. Curved or non-linear graphs

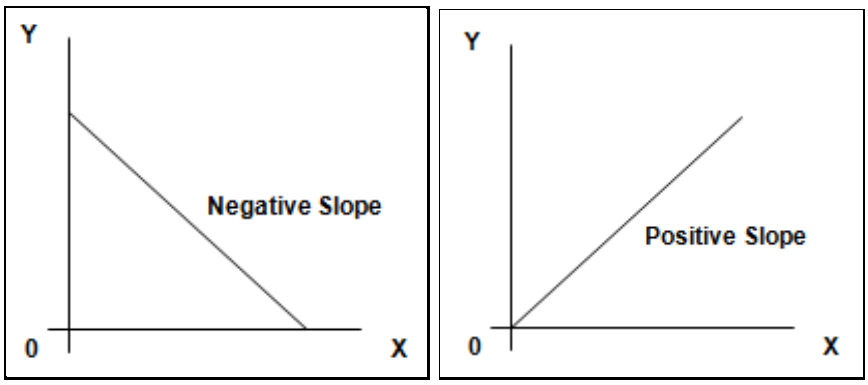
The focus in this text and/or course will, primarily, be on the 1st Quadrant or Quadrant 1 or Quadrant I (see below), where [1] the y-axis is indicated at the top of the vertical number line in a large font, [2] the x-axis is indicated at the far right of the horizontal number line in a large font, and [3] the "point of origin" is indicated in a large font at the center of the y-axis and x-axis. Note that the Quadrants are numbered in a counter-clockwise fashion.



More often than not, the focus of this text and course will be on the 1st Quadrant where the y-axis is price and the x-axis is quantity, as follows;

1. Straight-Line or Linear Graphs

- The graphic to the left (below) has a negative slope.
- The graphic to the right (below) has a positive slope.
- In both of the above cases, there is a high correlation between the x-axis (horizontal) and the y-axis (vertical). Note that the 1-to-1 trade-off or correlation is constant.



The **NEGATIVE** slope:

- This is a typical slope for a straight-line derived demand curve where, for example, the diminishing marginal utility or diminishing marginal returns reflected by declining demand for the quantity of a product as the price of each unit of the product increases or the consumer's level of satiation increases with the quantity of a product consumed (e.g., I enjoy eating 1 pizza per week, but might not enjoy eating pizza each and every single day of the week). This represents a net utility decrease.
- This negative slope represents a negative correlation and can be used to exhibit a declining average fixed cost or average total cost (increasing returns to scale) or marginal revenue per unit.

- It is also a typical slope for the production possibilities frontier, where efficient trade-offs between alternatives, in a world of scarce resources, can be exhibited. Similarly, these trade-offs can be used to exhibit relations or the level of indifference and optimal consumer choice or a budget line, when comparing 2 goods or services or alternatives.

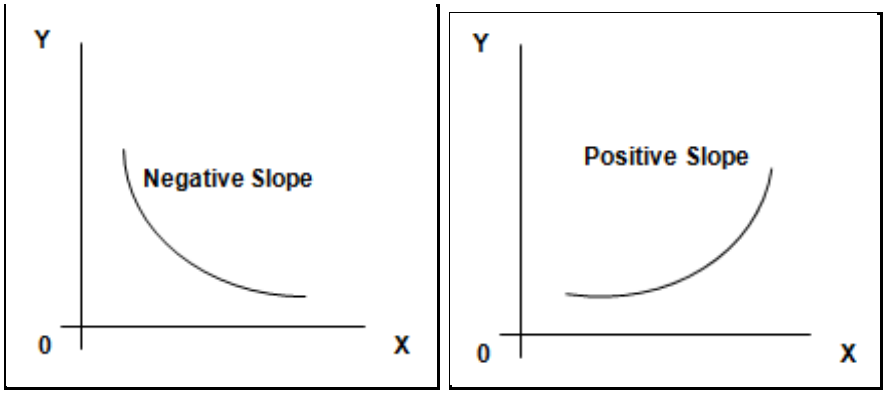
The **POSITIVE** slope:

- This is a typical slope for a straight-line supply curve where, for example, the increasing marginal utility or increasing marginal returns reflected by increasing demand for the quantity of a product as the price of each unit of the product increases or the consumer's level of satiation is not affected by the quantity of a product consumed (e.g., there is insufficient housing or rental units for the population). This represents a net utility increase.
- This positive slope represents a positive correlation and can be used to exhibit a declining average fixed cost or average total cost (decreasing returns to scale) or marginal revenue per unit.

All of the above will be addressed, in context, in later chapters in this text.

2. Curved or Non-Linear Graphs

- The graphic to the left (below) has a negative slope.
- The graphic to the right (below) has a positive slope.
- In both of the above cases, there is a high correlation between the x-axis (horizontal) and the y-axis (vertical). However, unlike the straight-line or linear graphs addressed in the above section, these are curved or non-linear, where the 1-to-1 trade-off or correlation is not a constant. The slope or trade-off changes at each point or [x, y] coordinate or matched pair along the curve. This is very important, as economists like to examine supply and demand in the context of margins or marginal analysis.



The **NEGATIVE** slope:

- This is a typical slope for a straight-line derived demand curve where, for example, the diminishing marginal utility or diminishing marginal returns reflected by declining demand for the quantity of a product as the price of each unit of the product increases or the consumer's level of

satiation increases with the quantity of a product consumed (e.g., I enjoy eating 1 pizza per week, but might not enjoy eating pizza each and every single day of the week). This represents a net utility decrease.

- This negative slope represents a negative correlation and can be used to exhibit a declining average fixed cost or average total cost (increasing returns to scale) or marginal revenue per unit.
- It is also a typical slope for the production possibilities frontier, where efficient trade-offs between alternatives, in a world of scarce resources, can be exhibited. Similarly, these trade-offs can be used to exhibit relations or the level of indifference and optimal consumer choice or a budget line, when comparing 2 goods or services or alternatives.

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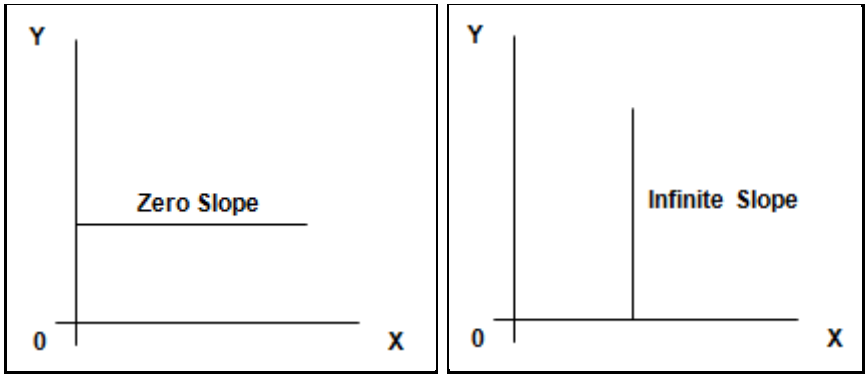
- This positive slope represents a positive correlation and can be used to exhibit a declining average fixed cost or average total cost (decreasing returns to scale) or marginal revenue per unit.

Again, all of the above will be addressed, in context, in later chapters in this text.

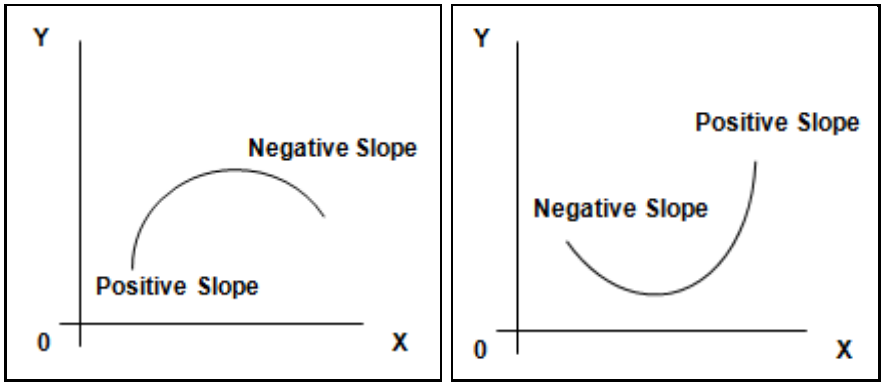
3. Other Straight-Line or Linear Graphs

- The graphic to the left (below) has a zero slope. The value of Y does not change, regardless of the value of X.
- The graphic to the right (below) has an infinite slope. The value of X does not change, regardless of the value of Y.



4. Curved or Non-Linear Graphs with Changing Slopes

- The graphic to the left (below) has a positive slope, but, at some point, a unitary or zero slope is established, and a negative slope follows.
- The graphic to the right (below) has a negative slope, but, as some point, a unitary or zero slope is established, and a positive slope follows.



5. Computing a Slope

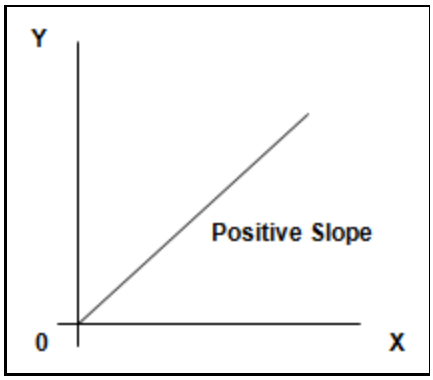
The slope of a point or [x,y] coordinate or matched pair is computed, as follows;

SLOPE = VERITICAL CHANGE ÷ HORIZONTAL CHANGE

Alternatively,

$$\textbf{SLOPE} = \frac{\textbf{VERTICAL CHANGE}}{\textbf{HORIZONTAL CHANGE}}$$

For example, the basic positive slope, below, illustrates a case where a curve originates at [x,y] coordinates of [0,0] or at the point of origin. In this case the line or curve is at a 45 degree angle or there is a 1-to-1 positive correlation between the [x,y] coordinates, where the matched pairs or coordinates would be [0,0], [1,1], [2,2], and so on.



In the above case, the Y-axis intercept is at 0 and the X-axis intercept is at 0 (i.e., the point of origin) and the slope is +1, as follows, in tabular form:

Coordinates or Matched Pair at Point	X	Y
A	0	0
B	1	1
C	2	2

Using the data from the above table, equations for slope computation follows:

$$\textbf{SLOPE} = \frac{\textbf{VERTICAL CHANGE FOR COORDINATES AT POINTS } [\mathbf{C} - \mathbf{B}]}{\textbf{HORIZONTAL CHANGE FOR COORDINATES AT POINTS } [\mathbf{C} - \mathbf{B}]}$$

$$+\mathbf{1} = \frac{[\mathbf{2} - \mathbf{1}]}{[\mathbf{2} - \mathbf{1}]}$$

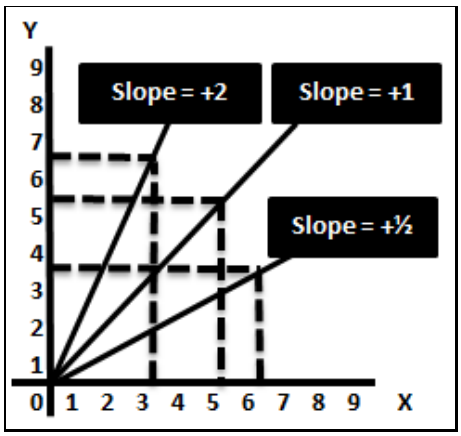
$$\textbf{SLOPE} = \frac{\textbf{VERTICAL CHANGE FOR COORDINATES AT POINTS } [\mathbf{B} - \mathbf{A}]}{\textbf{HORIZONTAL CHANGE FOR COORDINATES AT POINTS } [\mathbf{B} - \mathbf{A}]}$$

$$+\mathbf{1} = \frac{[\mathbf{1} - \mathbf{0}]}{[\mathbf{1} - \mathbf{0}]}$$

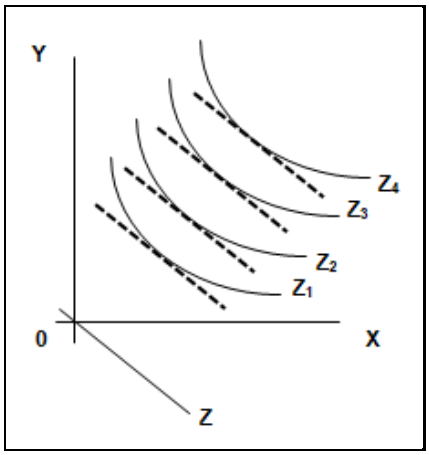
In generic form:

$$\textbf{SLOPE} = \frac{\textbf{Y} - \textbf{AXIS}}{\textbf{X} - \textbf{AXIS}}$$

If expanded on a labeled graphic, where a slope = +2 is at [3,6], a slope at +1 is at [5,5], and a slope at +½ is at [6,3], as follows:



Economists sometimes use production indifference maps or economic contour maps to capture 3 variables on a two-dimensional graphic. In the below case, note how the Z-axis is added and the slope (dashed lines) remains parallel to and constant with this axis and in alignment for a variety of shifting indifference curves.



Chapter 2
The Economy

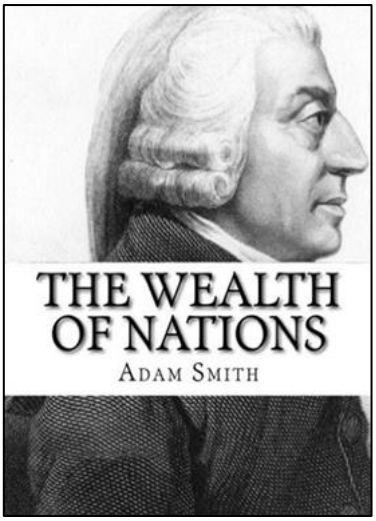
Learning Objectives

- Distinguish between an open economy and a closed economy and privatization.
- Distinguish between the unemployment rate and the labor participation rate.
- Explain how inputs include labor and capital.
- Describe the role of government and private sector with respect to outputs.
- Describe the mixed nature of the American economy.

America enjoys a relatively open, private-enterprise economy, but there are periods of economic growth, recession, fluctuations and bubbles that burst and corrections that occur. Our capitalistic system consists of labor and capital inputs under a supply and demand system largely left to the private sector, where the role of government is confined to and provides those necessities not easily or efficiently provided by the private sector. Therefore, our system is a mixture of public and private ownership of property.

Private-Enterprise Economy

America has enjoyed success and economic growth using a free market and private enterprise system. It is for this reason the United States (US) is so often referred to as "the land of opportunity." A reading of Adam Smith's ***The Wealth of Nations*** provides an excellent source to be studied by those favoring a free market or capitalistic system, where the "invisible hand" is credited for a greater good for the greatest number.



A free market or laissez-faire economy allows individuals and firms to pursue their own self-interest without central direction or regulation. These conditions of consumer sovereignty allow the consumer to decide what to purchase and what not to purchase, and provides for a free enterprise system, where individuals may form and operate their own private firms to maximize profits.

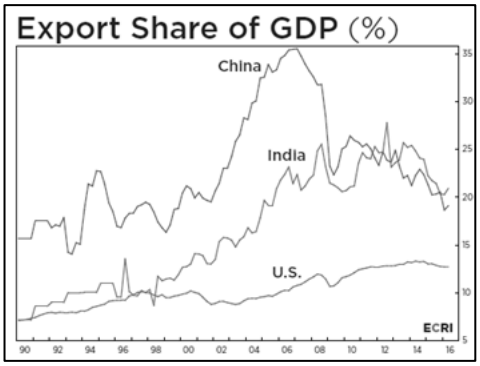
While all countries enjoy a mixture of public and private ownership of property, the US is one of the most "privatized." Exceptions might include mass transit systems or publicly held utilities. However, even these providers of goods and services can be privatized, though they are frequently regulated to protect the public.

While one of the most privatized economies in the world, the US Government must provide some goods and services, including the military and National defense, purchasing goods and services approximating 20 percent of gross domestic product (GDP). GDP represents a measure of the size of a nation's economy and equals the total amount of goods and services produced in a year. It is corrected for inflation.

Relatively Open or Closed Economy

Economists characterize an economy as relatively "open" or "closed" based on its practice of permitting or restricting imports and exports. Those nations with a large percentage of imports and exports as a percentage of GDP are relatively open. Those nations with a small percentage of imports and exports as a percentage of GDP are relatively closed.

The chart to the right summarizes exports, as a share or percentage of GDP in recent decades, for China, India, and the US.

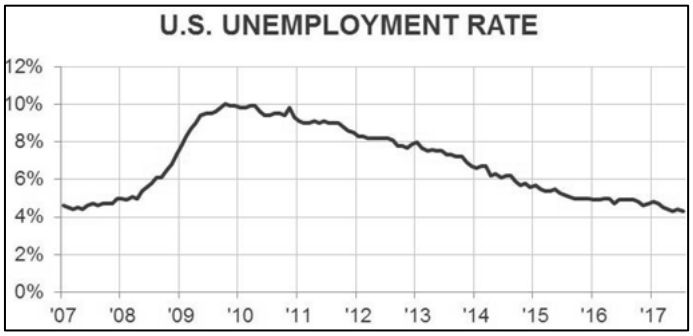


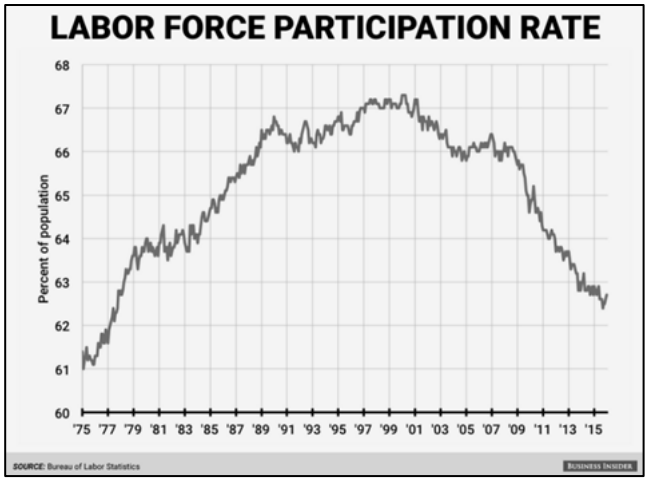
Economic Fluctuations, Bubbles and Corrections

The graphic to the left illustrates the impact of the "housing crisis" (2007-2009) on economic growth, in terms of percentage of real GDP, for the United Kingdom (UK), United States (US), and the Eurozone (EU). These economic fluctuations or business cycles can occur in a particular sector or segment of the economy and result in recessions, where GDP actually declines when a sector or segment of the economy advances too quickly and the bubble bursts or collapses.

Inputs – Workforce or Labor

Inputs, from a business perspective, include materials and labor as factors of production or factors or resources. While material or raw material costs may fluctuate based on supply and demand, the same may be said of labor and the workforce a nation enjoys. One measure of a nation's performance for its workforce is the unemployment rate.



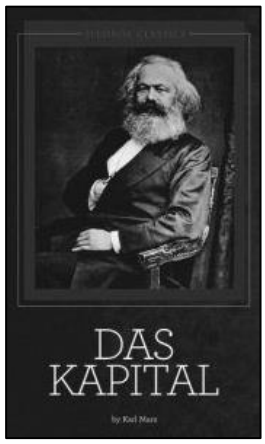


Note that the unemployment rate spiked after the "housing crisis," but has recovered since this economic fluctuation and related bubble burst and corrected for this sector or segment of the economy. Perhaps even more important than the US unemployment rate, which is historically low, is the labor force participation rate, which has been declining in the US, perhaps as a function of an aging of the US population or workforce, as "baby boomers" reach retirement age.

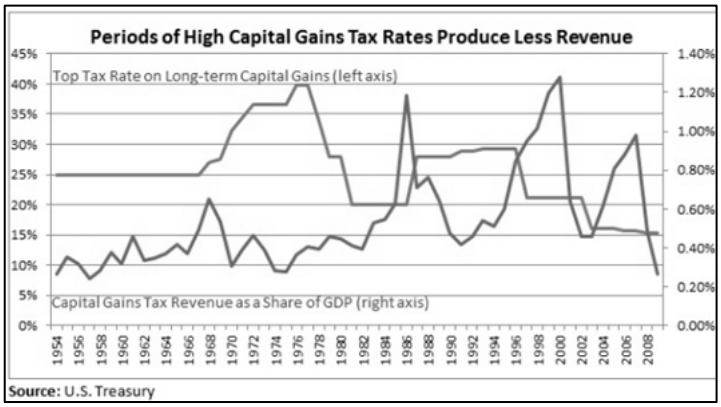
Inputs – Capital

Inputs, from a business perspective, also include capital. Capital is held by the owners of land, natural resources, the means or production, and economic wealth.

The US provides economic incentives for those controlling capital or economic wealth to invest this capital. One illustration of this fact is that capital gains are taxed at a lower rate relative to a wage earner's salary or what is referred to as "earned income."



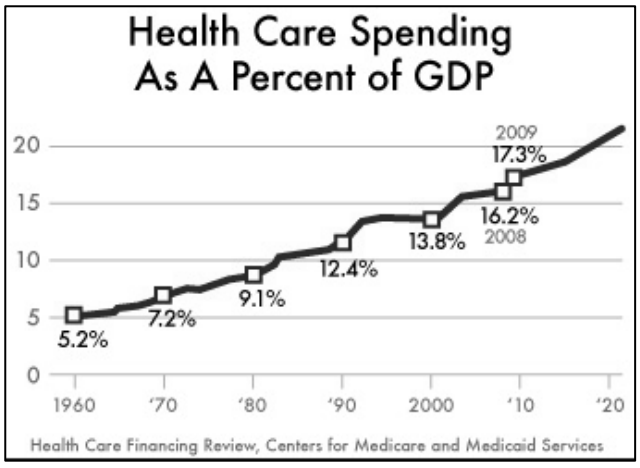
This issue is often expressed by politicians in the context of what might be best characterized as "class warfare," where those not in the possession of significant amounts of capital for investment, but relying on their labor for income, are persuaded to believe that lower tax rates on capital gains enjoyed by the owners of capital is unfair or inequitable. An excellent source for those interested in studying, understanding, and/or promoting this position is the book, ***Das Kapital***, by Karl Marx, and recommended reading to gain insights into this philosophy.



In broad and general terms, the Republican party in US would suggest that lower tax rates on capital gains is desirable or preferable and the Democrat party in the US would suggest that higher tax rates on capital gains is desirable or preferable. In recent years, these positions have surfaced in the form of a focus raising taxes on "the top 1%" earners in the US.

Outputs – Role of the Private Sector

Consumer spending accounts for about 70 percent of GDP, where housing consumes the largest share of their income and health care closely follows. It is for these reasons that the "housing crisis" represented a significant event over the past decade, and healthcare costs and the provision of healthcare to all Americans remains a topic of great concern. In the case of healthcare, Americans are not in agreement with respect to whether or not the private sector is able to provide adequate, cost-effective health care to the population.



The US system relies, primarily, on capitalism, competition, and profit motive to achieve efficiency and serve the needs of consumers. However, to the extent that the private sector fails to achieve these objectives, as in the case of healthcare, many become disillusioned with the private sector and believe that the role of Government should be expanded to solve the problem.

Outputs – Role of the Government

A free market system requires some government intervention or role. The most apparent example is that of national defense.

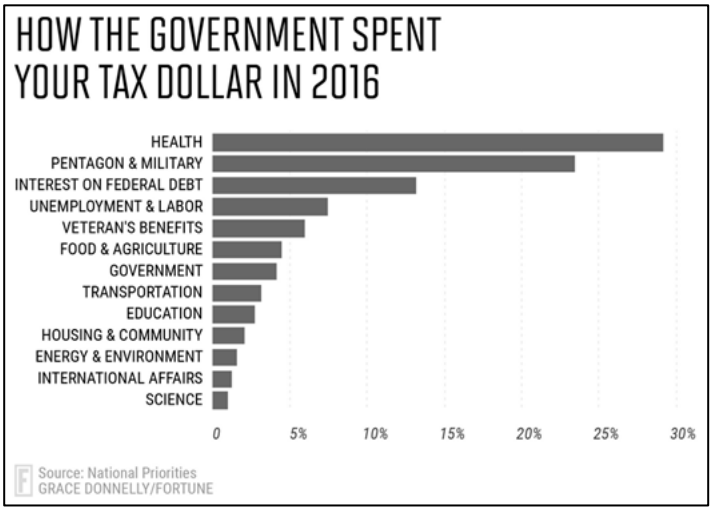
Historically, a market economy-based government has

- Created and enforced laws
- Regulated businesses
- Provided national defense & services not reasonably provided by the private sector
- Collected taxes to pay for national defense and these other services
- Redistributed income

Discussions regarding the appropriate and relative role government should play in the above generate considerable debate, controversy and disagreement:

To what extent should Government play the role of rule maker, referee, and arbitrator and pass laws and regulations to control behaviors? Certainly, antitrust laws are designed to protect the consuming public from the elimination of competition in favor of monopolistic control of a market, segment or sector of the economy. In other cases, laws and regulations are designed to protect the public and promote social objectives, though governments can also fail to protect the public, as in the case of the Flint, Michigan water supply, which became toxic and poisoned the citizens in the community. This was the result of a poor decision by government leaders. Perhaps, it is at least, in part, for this reason that Thomas Jefferson said that government is best that governs least, and, in more recent years, Presidents Reagan, both Bush Presidents, President Clinton, and President Trump pledged to eliminate inappropriate regulations.

Government spending and taxation is most frequently a topic of political debate, and concerns regarding deficit spending arise. Neither political party would like to address the growth in entitlement programs for Social Security, often referred to as the "3rd rail" of politics, since older and retired Americans tend to vote in higher percentages when compared to the general population, and these politicians are (legitimately) concerned that resolving this issue might result in their failure to get re-elected. This topic, of course, is closely related to the aging population and reductions in labor participation rates discussed in an earlier section of this chapter, which, of course, also increases health care costs for Medicare and Medicaid, as older Americans tend to require more health care and have more costly health care problems.



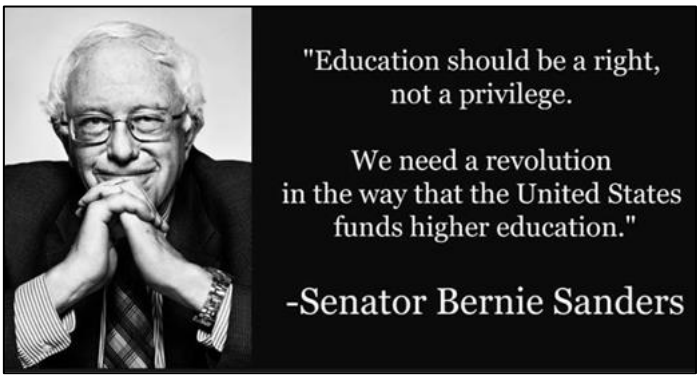
The above do not by any means represent a comprehensive list. In addition to Social Security and Medicare and Medicaid, unemployment insurance and other programs designed to provide assistance to the poor,

military spending, interest on a growing national debt arising from deficit spending, and the deterioration of our bridges, roads, and infrastructure represent contemporary, hotly debated issues.

Spending, of course, requires the collection of taxes. We pay income and payroll taxes, sales taxes are imposed and based on consumption levels, property taxes are levied, usually to support local police, fire and education, and we pay taxes on gasoline and liquor and tobacco, where taxes on the latter are referred to and justified as “sin” taxes.

In the US, our system of taxation on income is progressive. Tax rates rise as income levels increase. We use these and other tax receipts, in part, to redistribute income through transfer payments, intended, but not always successful, some would argue, in reducing inequality.

Many would argue that Sweden represents a successful example of the Socialistic notions of “from each according to his ability, to each according to his needs” (Karl Marx), but it was not so successful under the former Soviet Union or United Soviet Socialist Republic (USSR). Socialism is likely to find greatest support among US Democrats and liberals. Senator Bernie Sanders, a recent Presidential candidate, represents the most recent and most prominent example of a Socialist ideology.



America is a Mixed Economy

While we do not all share the same ideology, the US represents a mixed economy, with purely public ownership, purely private ownership, and blended ownership of property. These issues of public versus private ownership and control will continue to be hotly debated and economists will examine these topics and study the impact of past decisions with respect to efficiency and effectiveness, where barring ideological stumbling blocks, the greatest good for the greatest number might not be completely achieved, but progress may be made.

Summary

America is a large, industrialized nation, with a mixed economy providing for Social Security, but encouraging capitalism. In broad and general terms we have two political parties where the Democrat party and the Republican party represent a broad range of economic ideologies, both between and within these factions. The last Presidential election was interesting, in that a self-proclaimed socialist attempted to secure the Democrat nomination in the primary elections. Economists are citizens and tend to align themselves with one political party or the other in advancing their economic preferences. This text and course will provide you with a basic foundation and understanding of many of these economic and social issues and proposed solutions.

Chapter 3
Scarcity & Choice

Learning Objectives

- Explain how we determine what gets produced.
- Describe how we determine how it is produced.
- Explain how we determine who gets what is produced.
- Describe the basic trade-offs illustrated by the production possibility frontier (PPF).
- Define opportunity cost.
- Describe how it is that Government as a referee, business regulator, and redistributor or wealth.

Resources are often classified into 3 categories:

1. Land,
2. Labor, and
3. Capital

We do not have an unlimited supply of any of the above resources. Resource scarcity represents a constraint that forces choices between two or more alternatives.

Scarcity & Limited Economic Resources, Choice & Opportunity Cost

A fundamental notion of economics is the reality that goods and services are not unlimited and are constrained by scarcity. Scarcity and limited resources require decision-making and choice.

Choice involves consideration of opportunity cost. The cost of choice or choosing one alternative or decision, in a world of scarce or limited resources, requires trade-offs in that the consumption of more of one good or service may require less consumption of an alternative good or service.

It is presumed preferable that opportunity cost and market price be aligned or connected. An open or market-based economy tends to achieve this objective.

Therefore, as the price level increases for a good or service that is becoming increasingly scarce, alternatives might be more likely to be considered. Stated alternatively, a well-functioning market is one where goods and services with a high opportunity cost will also have a high money cost and goods and services with a low opportunity cost will also have a low money cost.

The classic example used in texts and for illustration to students, is the opportunity cost of a college education. In choosing to attend college, if rational, you are anticipating that the highest valued alternative benefit forgone, lower wages or salaries under a condition of immediate employment, will be offset and exceeded, at some future point in time, by the increased earnings you generate from this loss of immediate income.

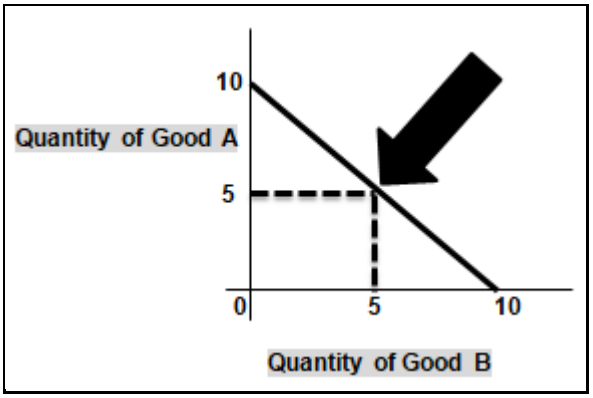
In economics, we assume that the decision-maker prefers to make the optimal decision when choosing between alternatives. This decision is made after both implicit and explicit considerations and comparisons have been made. Economists tend to use marginal analysis to examine the decision-making process of optimal choice or selections among alternatives.

Scarcity & Choice – Inputs, Outputs & the Production Possibilities Frontier

Finished goods and services or outputs require raw materials, labor and overhead or inputs. Inputs may have alternative uses, are scarce or limited, and, so, involve trade-offs. For example, the classic example is the trade-off between consumer goods and military goods, like butter or bullets, respectively.

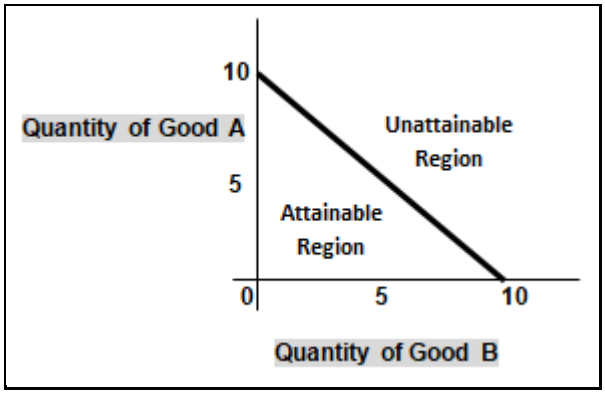
The production possibility frontier provides for a graphic example illustrating the alternatives available between two production choices. The trade-offs can be illustrated in either linear or non-linear forms, as follows:

The linear form of the production possibilities frontier is provided below. Due to the scarcity of inputs, you can produce 10 units of good A and 0 units of good B, 5 units of good A and 5 units of good B (black arrow), or 0 units of good A and 10 units of good B. In the below case, there is a **1-to-1 trade-off** between goods A and B.



In the above and below cases, the opportunity cost of producing 10 units of good A is the loss of all units of good B, the opportunity cost of producing 5 units of good A is the loss of 5 units of good B, and the opportunity cost of producing 10 units of good B is the loss of all units of good A.

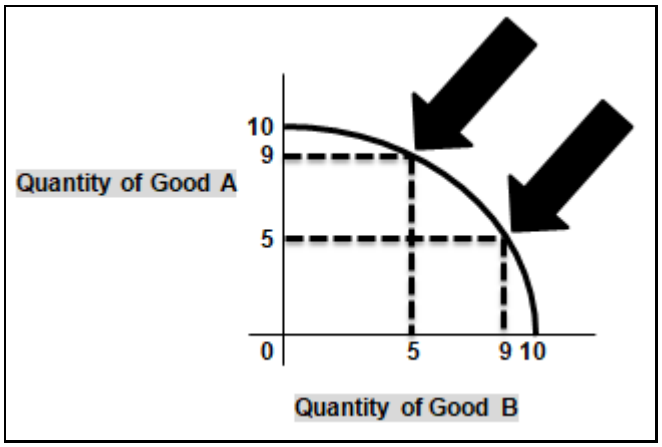
These decisions are usually made based on profit-maximizing strategies, where, for example, if someone can sell 10 units of good A more profitably, they will do this.



Anything inside of the production possibilities frontier is attainable (see above). Anything outside of the production possibilities frontier is unattainable.

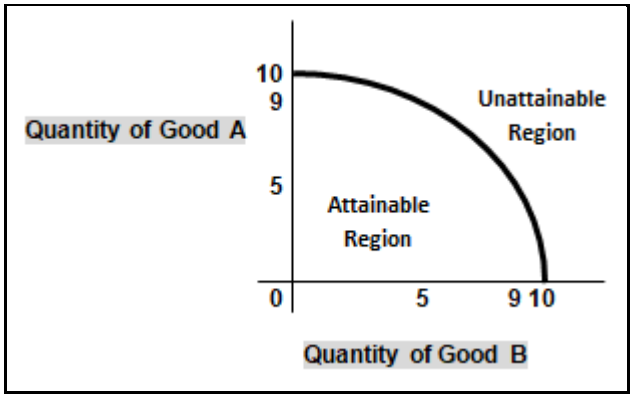
The non-linear form of the production possibilities frontier is provided below. Due to the scarcity of inputs, you can produce 10 units of good A and 0 units of good B, 9 units of good A and 5 units of good B (black arrow), 5 units of good A and 9 units of good B (black arrow), or 0 units of good A and 10 units of good B.

In the below case, there is **an-other-than 1-to-1 trade-off** between goods A and B. This less or other than linear trade-off is characterized as a principle of increasing cost or a law of diminishing returns. This is because it costs 5 units of good B to go from 9 to 10 units of good A, and visa/versa.



In the above and below cases, the opportunity cost of producing 10 units of good A is the loss of all units of good B, the opportunity cost of producing 5 units of good A is the loss of 1 unit of good B, and the opportunity cost of producing 10 units of good B is the loss of all units of good A.

Again, these decisions are usually made based on profit-maximizing strategies, where, for example, if someone can sell 10 units of good A more profitably, they will do this.



Again, anything inside of the production possibilities frontier is attainable. Anything outside of the production possibilities frontier is unattainable.

In the above cases, profit-maximizing is presumed. However, in order to maximize profits, the firm must develop and have this information available to develop a profit-maximizing strategy.

For example, when marijuana was legalized in the state of


MARIJUANA

Washington has more pot than it can smoke

Jane Wells | @janewells

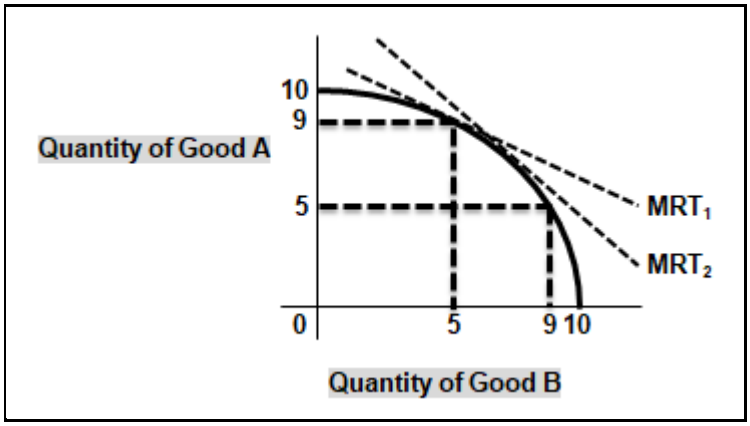
Published 10:53 AM ET Wed, 11 Feb 2015 | Updated 2:07 PM ET Wed, 11 Feb 2015

CNBC

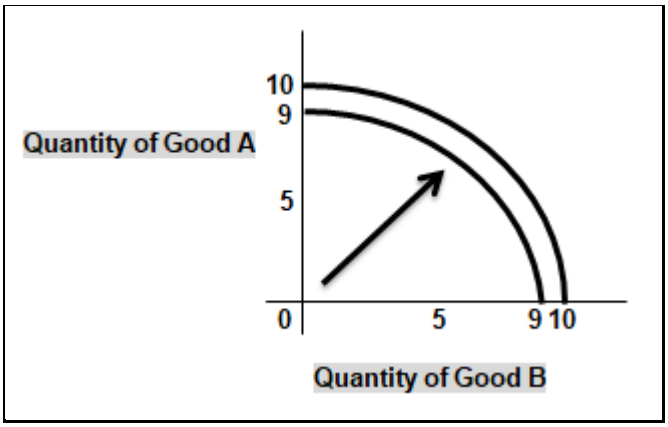
Supply is outstripping demand in the unlikeliest place—legal recreational marijuana in the state of Washington. Growers who jumped into the new legal market hoping to make a killing in cannabis are now getting killed by a glut of product.

Washington, too many farmers entered the market. This caused an unanticipated shift in the price available for output.

The slope of the production possibility frontier (PPF), at any given point, is referred to as the marginal rate of transformation (MRT), where two separate examples, MRT_1 and MRT_2 are provided as examples, below.



Economic growth shifts the PPF up and to the right.

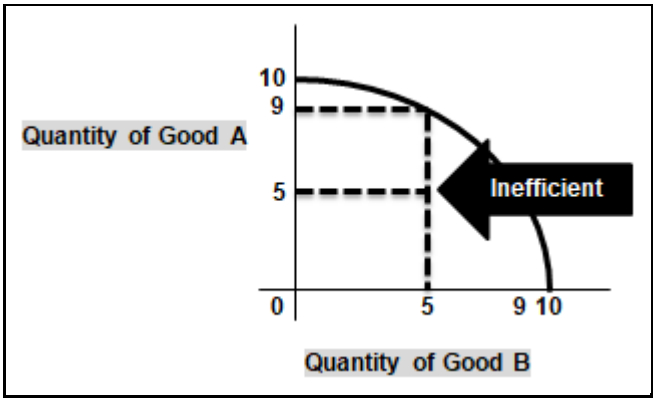


While the production possibility frontier is based on inputs and remained constant, the anticipated money price achievable for output changed, unfavorably. This topic is really more closely associated with supply and demand than the production possibilities frontier, and will be addressed in the next chapter. However, it is important to note that the decision to maximize output returns based on input is impacted by the money price available for the output, where the price for all units of output does not remain constant at all supply or output levels.

Efficiency

Outputs are said to be produced efficiently if a condition exists where larger amounts of output cannot be produced without increasing inputs or giving up or trading-off some quantity of another output. It represents a condition where there is an absence of waste and the maximization of output

production. Therefore, producing **inside** the production possibilities frontier is presumed to be **inefficient** (see below), and producing along the production possibilities frontier is presumed to be efficient.



An excellent example of inefficiency is unemployment, where human capital and human resources are not consumed or deployed at capacity and to their highest and best use, and for the benefit of all. After all, unemployment represents unproductive time and time cannot be stored for later consumption and use.

The failure to maximize employment, therefore, reduces the goods and services available to all for consumption, and, necessarily, this inefficiency reduces the availability of the benefits that might otherwise be available for all and the common good.

Economic Coordination

Allocating scare economic resources to their highest and best use and for the greatest good of all requires

1. The efficient allocation and\or utilization of scarce economic resources
2. The identification of the optimal combination of goods and services to produce
3. The optimal distribution of output to individuals

These decisions are difficult, subject to bias and taste and preference issues, and it is nearly impossible to achieve consensus with respect to the optimal mix of inputs and/or outputs or the allocation of scarce resources.

Economic Coordination – 1 – Efficient Allocation of Scarce Resources

The division of labor into specialized tasks to achieve greater expertise and efficiency is a concept credited to Adam Smith in **The Wealth of Nations**, and in the context of pin manufacturing, but is also a theme of a famous film, **Les Misérables**, where several, excellent variations have been produced, including one starring Liam Neeson, perhaps better known as an action hero in the **Taken** (2009, 2012 and 2015) series of films.

In the film, he escapes from prison and stumbles onto a town, purchasing a firm that produces plates and dishes, and standardizes production and increases the quality of the product and the wealth of the entire community, in much the same way Adam Smith recommended in his pin production illustration and example.

In both cases, the comparative advantage of those possessing specialized skills is exploited for the benefit of all. Human capital is deployed to its highest and best use, and all benefit as a result.

Nations, of course, have comparative advantages. Canada, for example, is rich with natural resources. China and Mexico have relatively cheap labor. In the latter case, the outsourcing of tasks and activities in manufacturing has been made to China, Mexico, and other emerging markets to exploit these comparative advantages.

Economic Coordination – 2 – Identifying Optimal Production Quantities

Specialization, while achieving great efficiency and effectiveness, requires exchange mechanisms to allow for a greater standard of living for all. Money is the medium of exchange used to exploit these comparative advantages. However, in recent years, block chain technology and crypto currencies like Bitcoin have gained some attention and appreciation in value.

Regardless of the medium of exchange, a common currency or one that easily converts from one currency or medium of exchange to another is required to fully exploit comparative advantage. The market is left to decide how to use limited or scarce inputs to produce the desired or profit-maximizing level of outputs, all, while exploiting conditions of comparative advantage.

Economic Coordination – 3 – Determining Optimal Distribution of Output

The distribution of output, in an open economy or free-market system, is left to individual producers and consumers, all presumed to be acting in their own self-interest. This market system is less than perfect, and failures of these market mechanisms can occur (e.g., the housing crisis), but this system tends to maximize the overall benefits when compared to a command economy, such as the failed United Soviet Socialist Republic or USSR. In a command economy, the central government directly or indirectly establishes output targets, incomes and prices. China, for example, has made significant progress toward the adoption of an open market-based economy in recent decades

Summary

We all make many decisions involving scarcity and choice and opportunity costs on a daily basis. You might, for example, choose to watch a film or do some gardening, or study a topic or earn additional money with your time on a particular day.

There are trade-offs involved and the nearly unlimited combination of decisions makes it nearly impossible to quantify and examine all of them at the same time, but economists attempt to provide a theoretical model or models to examine two or more, and, to the extent practicable, develop and examine mechanisms to reduce these decisions to their least qualitative and most quantitative level.

Chapter 4
Supply & Demand

Learning Objectives

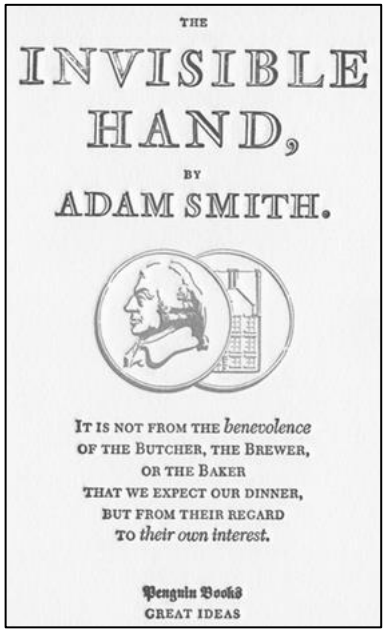
- Explain what is meant by the “invisible hand.”
- Describe the demand curve, how it illustrates the quantity demanded and what might cause a shift in the demand curve.
- Describe the supply curve, how it illustrates the quantity supplied and what might cause a shift in the supply curve.
- Explain conditions that lead to shortages, surpluses and the establishment of equilibrium.
- Describe the impact of a price floor and a price ceiling.

If there is a surplus or excess supply of a good or service, price levels may decline. If there is a shortage of supply of a good or service, price levels may rise. Price floors and price ceilings may distort these open economy or market mechanisms.

A consumer surplus is the difference between the maximum amount a consumer is willing to pay for a good or service and its current market price. A producer surplus is the difference between the current market price and the cost for the firm to produce a product or service.

Adam Smith's Invisible Hand

Adam Smith, author of **The Wealth of Nations**, referred to the invisible hand of self-interest and the power of consumer preference to lead the market to the efficient and effective production of appropriate levels of goods and services. These market mechanisms, he would argue, are preferable to legislated price control leading to floors (on farm products, for example) and ceilings (on rent and in the form of rent controls, for example).



Quantity Demanded

The quantity demanded by consumers tends to depend on price, population size, consumer income, taste and preferences, and the relative price of alternative products. A demand schedule is a table showing the quantity demanded as the price of the product changes, holding all other determinants constant or "all other thing being equal."

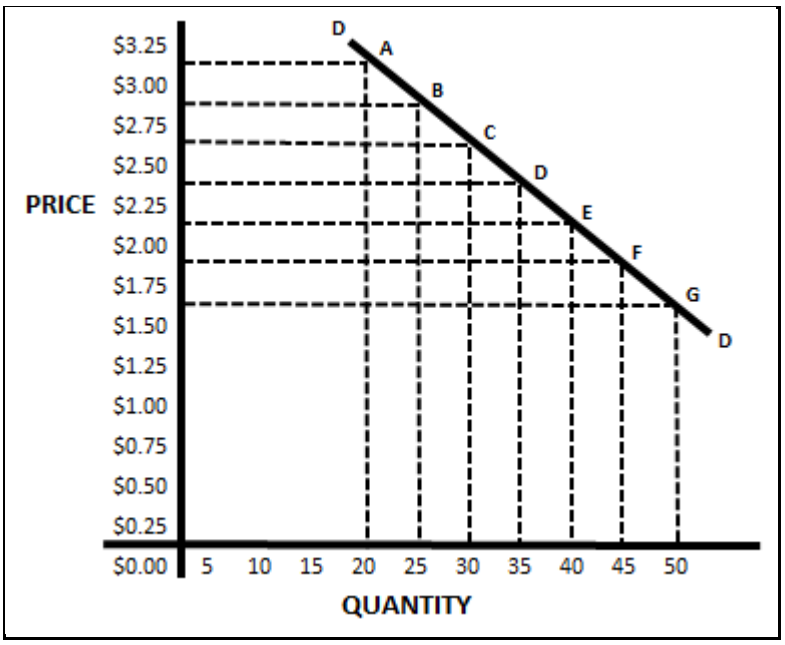
Generally

- As the price of an item rises, the quantity demanded declines.
- As the price of an item declines, the quantity demanded rises.

A demand curve is a graphic depicted from a demand schedule. It illustrates how the demand for a product changes as the price of the product changes, ceteris paribus. An example of a demand schedule, in tabular form, and the related graphic, follows:

Price	Quantity Demanded	Label
$3.00	20	A
$2.75	25	B
$2.50	30	C
$2.25	35	D
$2.00	40	E
$1.75	45	F
$1.50	50	G

Using the above table and the below graphic, note that at a price of $3.00 per unit, a quantity of 20 units will be demanded (label or point A), at a price of $2.75 per unit, a quantity of 25 units will be demanded (label or point B),…and at a price of $1.50 per unit, a quantity of 50 units will be demanded (label or point G).

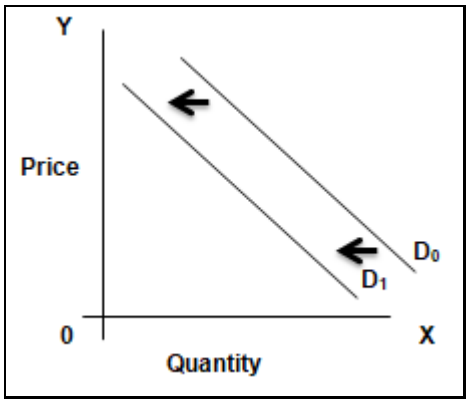


The above are price and quantity levels developed and projected and involving movement along a linear demand curve (D). A shift in this linear demand curve is also possible.

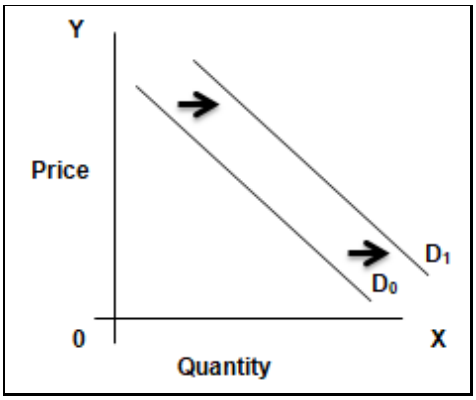
A shift in a demand curve occurs when any relevant variable other than price changes. It can shift outward if consumers want more at any given price per unit and it can shift inward if consumers want less at any given price per unit.

Even if the price of an item does not change, changes in population size, population composition or characteristics, consumer taste and preference, or a change in the price of alternatives or substitute products can cause a shift in the entire demand curve.

In the below case, the demand curve shifts inward, from D_0 to D_1, suggesting that consumers want less of this good. This can occur in consumer incomes fall or decline, population increases, consumer tastes and preferences change, and/or the price of an alternative or substitute product decreases.



In the below case, the demand curve shifts outward, from D_0 to D_1, suggesting that consumers want more of this good. This can occur in consumer incomes rise or increase, population decreases, consumer tastes and preferences change, and\or the price of an alternative or substitute product increases.



Therefore,

- A change in the price of a good produces movement along a demand curve, and
- A change in any other variable other than price produces a shift in the entire demand curve.

Quantity Supplied

The quantity supplied to consumers tends to depend on price, population size, consumer income, taste and preferences, and the relative price of alternative products. A supply schedule is a table

showing the quantity supplied as the price of the product changes, holding all other determinants constant or "all other thing being equal."

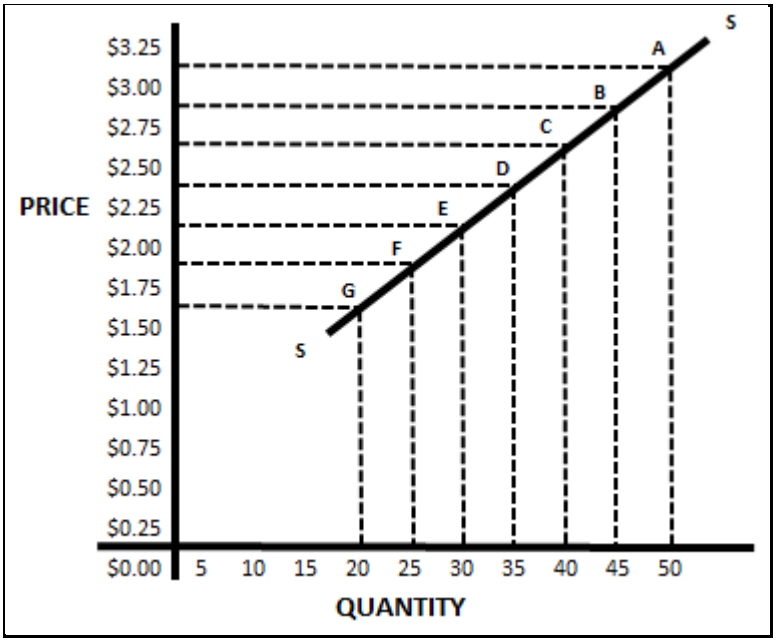
Generally

- As the price of an item rises, the quantity supplied rises.
- As the price of an item declines, the quantity supplied declines.

A supply curve is a graphic depicted from a supply schedule. It illustrates how the supply of a product changes as the price of the product changes, ceteris paribus. An example of a supply schedule, in tabular form, and the related graphic, follows:

Price	Quantity Supplied	Label
$3.00	50	A
$2.75	45	B
$2.50	40	C
$2.25	35	D
$2.00	30	E
$1.75	25	F
$1.50	20	G

Using the above table and the below graphic, note that at a price of $3.00 per unit, a quantity of 50 units will be supplied (label or point A), at a price of $2.75 per unit, a quantity of 45 units will be supplied (label or point B),…and at a price of $1.50 per unit, a quantity of 20 units will be supplied (label or point G).

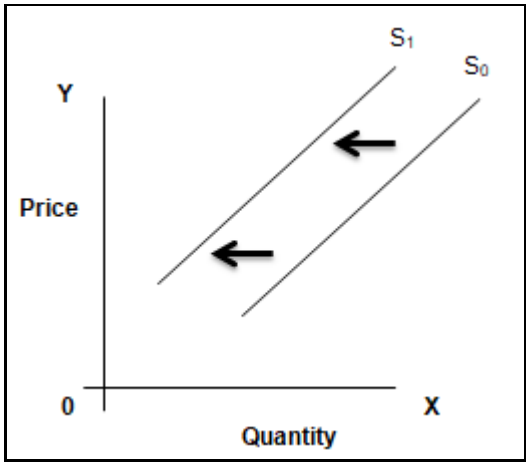


The above are price and quantity levels developed and projected and involving movement along a linear supply curve (S). A shift in this linear supply curve is also possible.

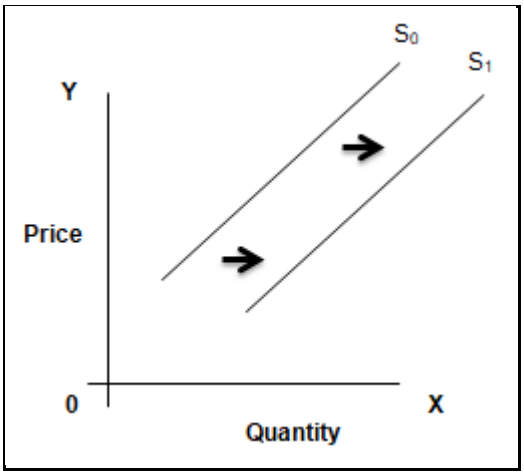
A shift in a supply curve occurs when any relevant variable other than price changes. It can shift outward if consumers want more at any given price per unit and it can shift inward if consumers want less at any given price per unit.

Even if the price of an item does not change, changes in population size, population composition or characteristics, consumer taste and preference, or a change in the price of alternatives or substitute products can cause a shift in the entire supply curve.

In the below case, the supply curve shifts inward, from S_0 to S_1, suggesting that suppliers will produce less of this good as the price of inputs increases. This can also occur if consumer incomes fall or decline, population decreases, consumer taste and preference changes, and\or the price of an alternative or substitute product decreases.



In the below case, the supply curve shifts outward, from S_0 to S_1, suggesting that suppliers will want to produce more of this good. This can occur if consumer incomes increase or rise, population increases, consumer tastes and preferences change and\or the price of an alternative or substitute product increases. Technological improvements may also lead to this outward shift in the supply curve.



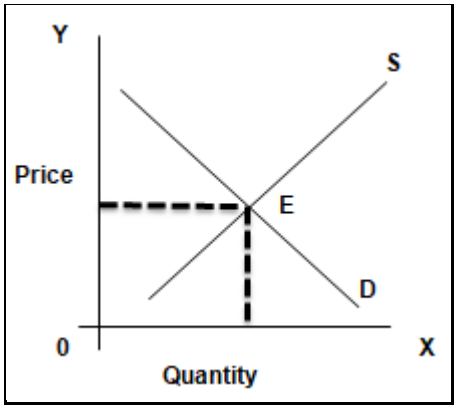
Therefore,

- A change in the price of a good produces movement along a supply curve, and
- A change in any other variable other than price produces a shift in the entire supply curve.

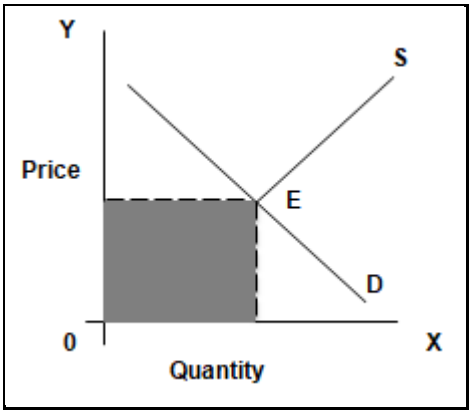
Supply & Demand, Equilibrium, and the Law of Supply &Demand

Supply (S) and demand (D) curves can be combined in a single graphic to produce a visual determination of the equilibrium (E) price and quantity.

- At equilibrium, there is no surplus and there is no shortage.
- At equilibrium there is no reason for a price to rise or fall.



The below modification shows a shaded area, where a shortage will occur if the price falls below the equilibrium price. The non-shaded area, alternatively, is one of surplus.



- Shortage occurs when quantity demanded exceeds (>) quantity supplied.
- Surplus occurs when quantity supplied exceeds (>) quantity demanded.
- Equilibrium occurs when the quantity demanded equals (=) the quantity supplied.

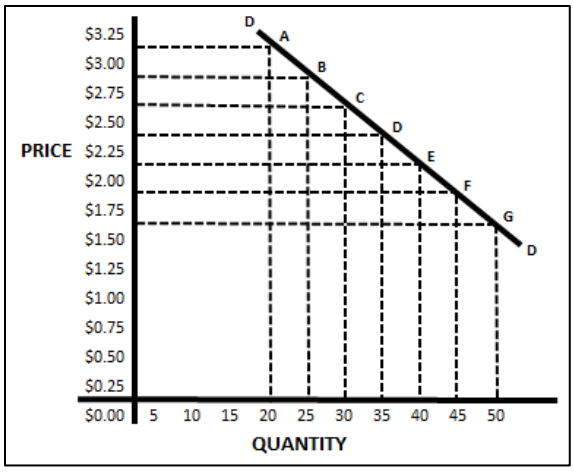
Therefore, in an open market or economy, the ***law of supply and demand*** suggests that the forces of supply and demand will cause the price to automatically adjust, as will the quantity supplied, until they are equal and equilibrium is established.

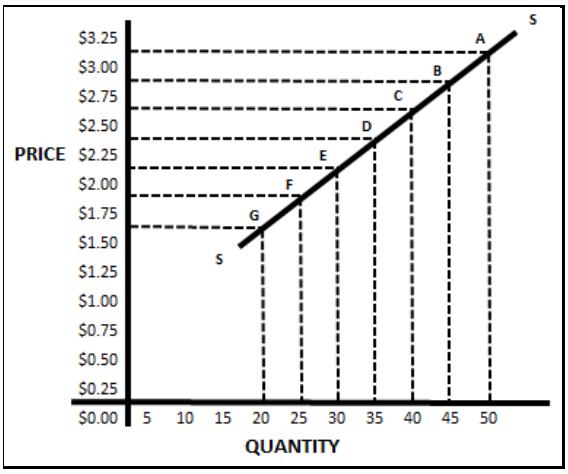
The Supply-Demand Diagram

Below are the demand and supply schedules and the demand and supply linear curves presented in the above sections:

Price	Quantity Demanded	Label
$3.00	20	A
$2.75	25	B
$2.50	30	C
$2.25	35	D
$2.00	40	E
$1.75	45	F
$1.50	50	G

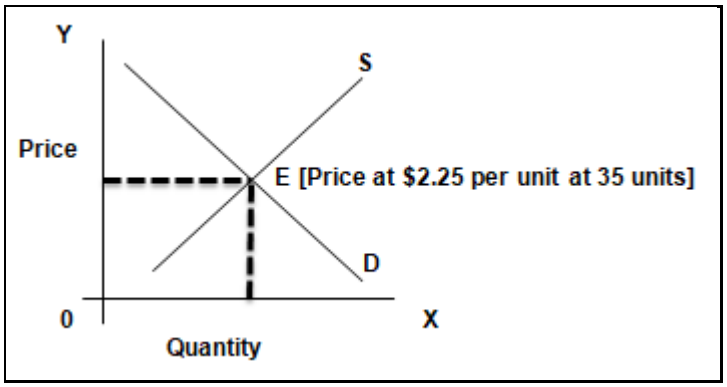
Price	Quantity Supplied	Label
$3.00	50	A
$2.75	45	B
$2.50	40	C
$2.25	35	D
$2.00	30	E
$1.75	25	F
$1.50	20	G





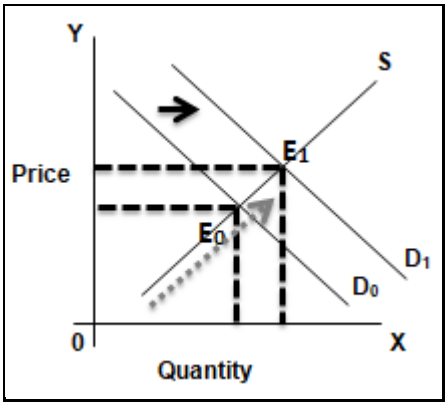
The below combines the above tables and graphics to illustrate equilibrium:

Price	Quantity Demanded	Quantity Supplied	Shortage or Surplus
$3.00	20	50	Shortage
$2.75	25	45	Shortage
$2.50	30	40	Shortage
$2.25	35	35	Equilibrium
$2.00	40	30	Surplus
$1.75	45	25	Surplus
$1.50	50	20	Surplus

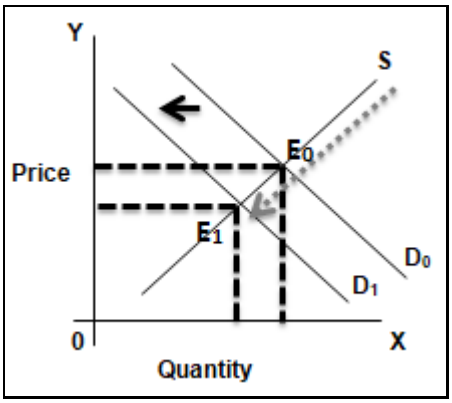


Shifting Demand & the Establishment of a New Supply-Demand Equilibrium

If demand for a product or service increases, the price and quantity produced will both increase. The below illustrates this fact pattern and the impact on the shift of the old demand curve (D_0) to a new level of demand (D_1). A new equilibrium price and quantity intersection is established as the change from E_0 to E_1 suggests.



If demand for a product or service decreases, the price and quantity produced will both decrease. The below illustrates this fact pattern and the impact on the shift of the old demand curve (D_0) to a new level of demand (D_1). A new equilibrium price and quantity intersection is established as the change from E_0 to E_1 suggests.

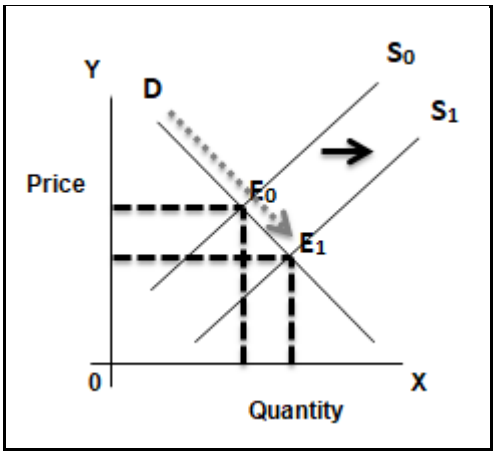


Therefore,

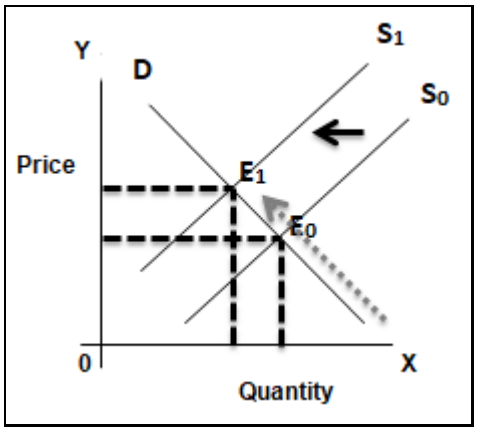
- Events causing a demand curve shift outward and to the right, and not affecting the supply curve, will result in an increase in the equilibrium price and an increase in the equilibrium quantity.
- Events causing a demand curve shift inward and to the left, and not affecting the supply curve, will result in a decrease in the equilibrium price and a decrease in the equilibrium quantity.

Shifting Supply & the Establishment of a New Supply-Demand Equilibrium

If the supply of a product or service increases, the price will decrease and the quantity demanded will increase. The below illustrates this fact pattern and the impact on the shift of the old supply curve (S_0) to a new supply level (S_1). A new equilibrium price and quantity intersection is established as the change from E_0 to E_1 suggests.



If the supply of a product or service decreases, the price will increase and the quantity demanded will decrease. The below illustrates this fact pattern and the impact on the shift of the old supply curve (S_0) to a new supply level (S_1). A new equilibrium price and quantity intersection is established as the change from E_0 to E_1 suggests.



Therefore,

- Events causing a supply curve shift outward and to the right, and not affecting the demand curve, will result in a decrease in the equilibrium price and an increase in the equilibrium quantity demanded.
- Events causing a supply curve shift inward and to the left, and not affecting the demand curve, will result in an increase in the equilibrium price and a decrease in the equilibrium quantity demanded.

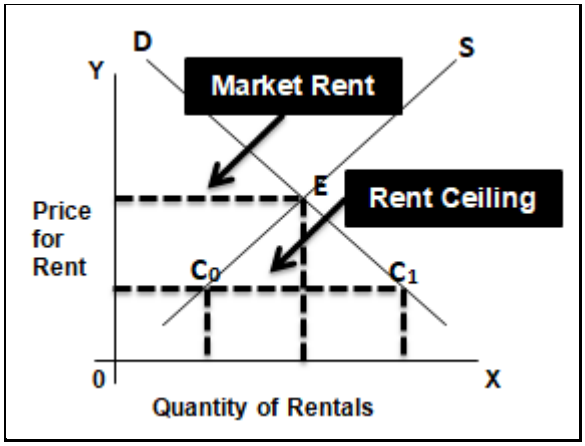
Market Mechanism Restraints

Efforts to restrain or manipulate open market mechanisms include price ceilings and price floors, as follows:

- Price ceilings are those prices that cannot be legally exceeded.
- Price floors are those prices below which a price is not permitted to fall.

Price ceilings [1] create a persistent shortage, because the quantity demanded exceeds the quantity demanded; [2] an illegal or black market to supply the shortage and fill the unmet demand; [3] generates illegal or black market price levels that are almost certain to exceed price levels otherwise available in a free or open market; [4] creates a condition where a portion of the price or sales proceeds benefits those other than those producing the good or service; and [5] investment in the industry or segment or sector ceases.

A common example used in most economics texts is that of rent controls in New York City. A graphic follows:



In the above example, the ceiling on rent imposed by rent controls is significantly lower than the market rent. Note that the supply (S), therefore, represents a much lower quantity of rentals than demanded (C_0), while, at the below market and rent controlled price, the quantity of rentals demanded is far to the right of the supply and even equilibrium price and quantity (C_1).

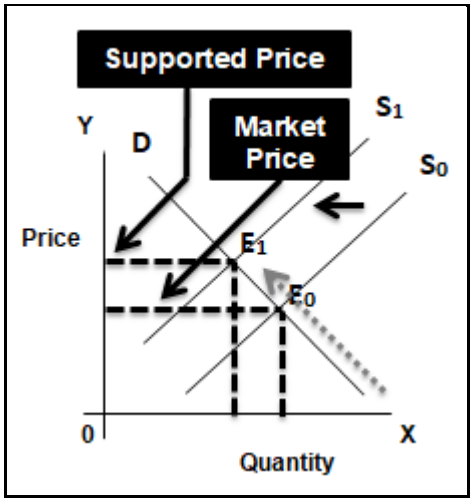
How does the market react? Some proper owners or landlords simply convert the residential rental to office space or alternative uses. In other cases, the residential rentals are not properly

maintained, since they do not generate market rents needed for repairs and maintenance. In even other cases, the buildings are simply abandoned by the owner or landlord, they no longer pay property taxes, and the property becomes an eyesore and a threat to public health and safety.

Of course, those benefitting from rent controls are quite happy, do everything they possibly can to maintain these ceilings on the below market rents they pay, and may even have some political influence, and use this influence to maintain this condition from which they personally benefit.

Price floors are not always designed to keep prices low and may even keep prices above free or open market levels (e.g., minimum wage and agricultural price supports). Price floors [1] create surpluses when sellers cannot find enough buyers; [2] create problems related to disposal in the case of goods; [3] may result in hidden, disguised or even undesirable discounts; and [4] if regulations keep prices abnormally or artificially high, overinvestment in the industry or sector may be encouraged.

A common example used in most economics texts is that of farm price supports for sugar or other commodities. A graphic follows:



In the above example, the floor or supported price for sugar or another commodity is significantly higher than the market value. Note that the quantity demanded declines as the equilibrium moves from E_0 to E_1.

Price ceilings and floors create [1] opportunities for favoritism and corruption; [2] can be difficult to enforce; [3] may generate the need for auxiliary restrictions; [4] limit transaction volume; and [5] must necessarily result in a less than optimal allocation of limited or scarce economic resources.

Summary

In an open market economy the invisible hand tends to lead supply and demand to a market-based level of equilibrium. Price ceilings and price floors can be legislatively imposed or regulatory agencies can interfere with these market-based mechanisms, but they will create less than efficient surpluses or shortages.

Chapter 5
Consumer Choice

Learning Objectives

- Define and describe total monetary utility, marginal utility, and the “law” of diminishing marginal utility.
- Explain why economists focus on and use marginal analysis.
- Define consumer’s surplus.
- Distinguish between a normal good and an inferior good.
- Explain the market demand curve and the “law” of demand.

Consumers make decisions based on the utility they derived based on their personal tastes and preferences and constrained by limited or scarce economic resources. Economists tend to examine consumer behavior and choice, and how they consume these scarce economic resources, at the margin.

Scarcity & Utility

Most consumers have limited or scarce resources, insufficient to purchase and consume all of the goods and services they would prefer. Therefore, the consumer makes a decision to purchase the good or service that provides them with the greatest utility. Some economists refer to relative measures of consumer satisfaction associated with alternative purchases as ***utils***.

- The total monetary utility is the quantity of a good or service, measured in monetary terms or units he or she is willing to give up in an exchange for the good or service.
- The marginal utility, measured in monetary terms of units he or she is willing to give up in an exchange to purchase one more unit of a good or service.

Economists like to examine issues in marginal terms. That is to say, they like to ask and answer questions like:

> ***If certificate of deposit or savings interest rates increase by one-quarter of 1 percent, how many investors might be convinced to sell their stocks in the stock market and use the proceeds to invest in an interest-bearing instrument like a certificate of deposit or savings account?***

We know that it will be more than zero, but economists like to build econometric models to, as closely as possible, approximate the impact in the above case or fact pattern. The models they develop are designed to estimate the impact of these changes…at the margin.

These models are used to advise politicians and policy makers on a wide range of issues, involving not only interest rates and the impact that an increase in interest rates might have on the stock market, but on all sorts of issues involving fiscal and monetary policy. The models may not be perfect and may not perfectly measure the impact of a change in policy, but economists attempt to make these measurements and learn from comparisons between their estimates and actual measures after a policy has been changed.

Marginal Utility, the Law of Diminishing Marginal Utility & Marginal Analysis

We all derive utility from the decisions we make with respect to the purchase and consumption of goods and services with our limited or scarce economic resources. Of course, different consumers have different tastes and preferences.

Let's us assume that you love pizza. You enjoy pizza so much, that you eat pizza a least one time per week. Would it be less satisfying to have pizza 2 times per week? How about 3 times per week? What about every single day of the week!

Certainly, at some point you would become tired of pizza, and, if you had pizza for several continuous days, the marginal utility you derived from eating pizza would decline. This is referred to as the law of diminishing marginal utility:

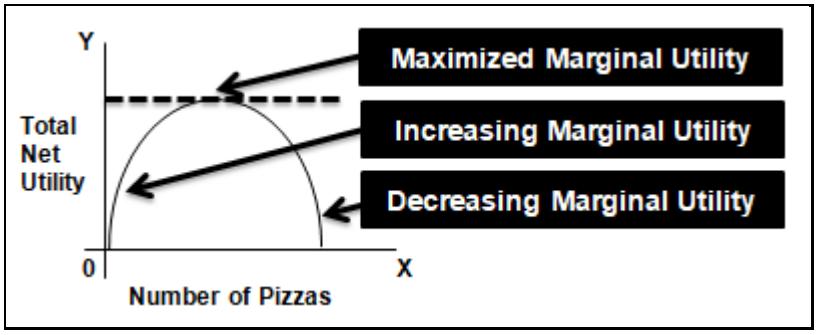
- The more of a good or service purchased or consumed, the less marginal utility an additional unit contributes to overall satisfaction.

Alternatively stated:

- As more of a commodity is acquired, total utility increases and marginal utility decreases.

Marginal analysis is the phrase used for methods employed to compute optimal choices made by consumers. It tests whether and by how much a small or incremental change in a decision allows the decision-maker to move closer to his or her goal.

Below is a graphic using the pizza example. As the number of pizzas purchased and consumed increases, total net utility increases, but at a diminishing rate (the law of diminishing marginal utility). At some point, marginal utility is maximized and a level of satiation is said to have been reached with respect to the purchase and consumption of pizza. Beyond this point, the marginal utility of additional pizzas purchased and consumed is actually negative. The consumer is tired of purchasing and eating pizza.



There are 2 rules with respect to the optimal purchase quantity of a pizza or any other good or service, also known as the utility-maximizing rule:

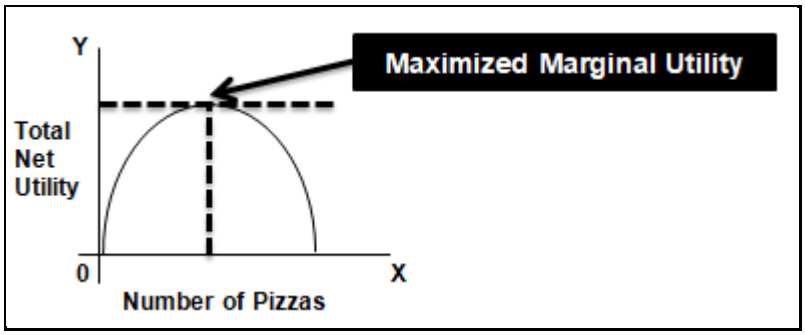
- **RULE 1 –** *If marginal net utility is positive, the consumer can purchase additional quantity to maximize total net utility, where marginal utility less price equals a positive total net utility with the purchase and consumption of an additional unit of the good or service.*
- **RULE 2 –** *If marginal net utility is negative, the consumer cannot purchase additional quantity to maximize total net utility, and has surpassed the utility-maximizing unit level of purchase and consumption of the good or service.*

The **optimal purchase rule** or **utility-maximizing rule** follows:

MARGINAL NET UTILITY =
MARGINAL UTILITY FOR AN ADDITIONAL UNIT (MU) – PRICE FOR AN ADDITIONAL UNIT (P)

MARGINAL NET UTILITY = MU – P

Continuing with the pizza example, marginal net utility is maximized at the peak of the curve from the above graphic, as follows:



Alternatively, the consumer will continue to purchase and consume pizza to the point where his or her marginal utility equals zero:

MARGINAL NET UTILITY = MU – P = 0

We can address the above in terms of consumer choice as a trade-off and in the context of opportunity costs, as follows:

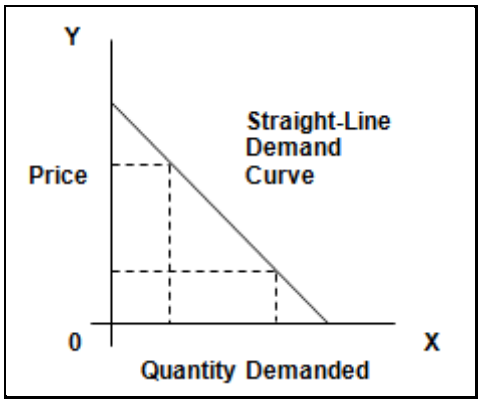
CONSUMER'S SURPLUS = TOTAL UTILITY = TOTAL EXPENDITURE

Consumer's surplus is the difference between the value to the consumer of some quantity of a good or service purchased and the amount that the market requires the consumer to pay. The market demand curve shows how the total quantity of a product or service demanded by all consumer changes as the price of the good or service changes.

Generally, a consumer will choose to continue to purchase a normal good to the point where their marginal net utility equals zero. However, this may not apply in the case of an inferior good. Continuing to use pizza as an example, as a consumer's income rises, he or she may view pizza as a relatively inferior good and choose, instead, to purchase and consume a variety of other foods.

The Law of Demand & Exceptions

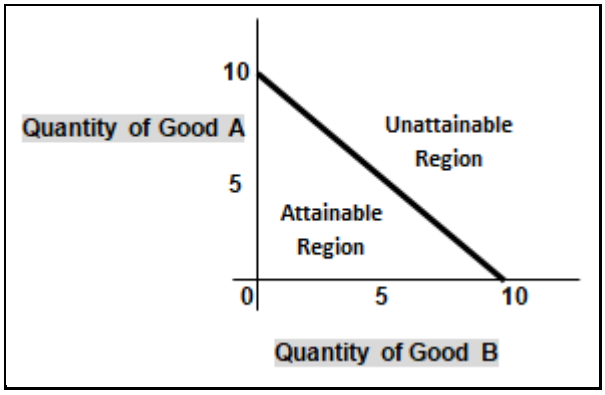
The law of demand states that lower prices will increase demand for most goods and services. It is, for this reason, that the demand curve has a negative slope.



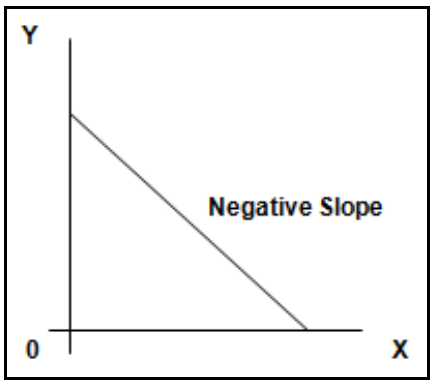
There are, of course, exceptions to the law of demand. For example, consumer may perceive a lower priced product as relatively inferior and a more expensive product as relatively superior. This includes purchase decisions based on branding or taste and preference. Marketing tends to build brands, brand consciousness and brand loyalty or manipulate consumer choice through advertising and other mechanisms.

The Budget Line

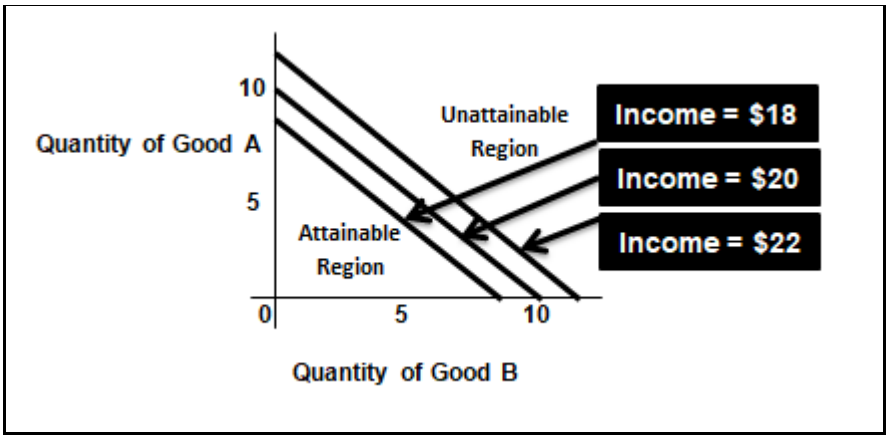
Income causes changes in the consumer's budget line, which, like a production possibilities frontier, represents a constraint. First, recall the production possibilities frontier, where there is a trade-off between the quantity of good A and the quantity of good B that can be produced.



Note the negative slope of the curve:



Now, assume a variety of income levels:



The above is a bit over-simplistic, as it presents a consumer budget line where the consumer continues to demand a 1-to-1 consumption pattern for good A and good B as income rises from $18 to $20 to $22, and the quantity of each good is $1 per unit (e.g., 10 units of Good A at $1 each plus 10 units of Good B at $1 each equals $20). The budget line is like the production possibilities frontier. It presents a constraint in graphic form.

Summary

Consumer choice is dependent on the utility derived by the consumer for an infinite number of consumption choices. Economists assume that consumers are rational and seek optimal or utility-maximizing consumption levels of the broad variety of goods and services available. As consumer income levels increase or decrease, these consumption patterns change and these changes are too complex to model, but a basic effort to develop models between two alternatives allows for a framework where more complex conditions might be examined. This chapter only introduces these very basic models.

Chapter 6
Elasticity

Learning Objectives

- Define price elasticity of demand in the context of a demand curve that is elastic, inelastic, and unit-elastic.
- Define income elasticity of demand and cross elasticity of demand in the context of compliments and substitutes.
- Explain how an optimal decision might be arrived at.

Elasticity and responsiveness are synonymous. If a good or service is price elastic, it is price responsive. If a good or service is income elastic, it is income responsive. The reverse is true in cases of inelasticity.

Demand & Elasticity

Elasticity of demand or price elasticity of demand is a measure of price responsiveness. It is the ratio of the percentage change in a quantity demanded to the percentage change in the price that is causally linked to the change in quantity demanded.

Examples follow, where demand is:

ELASTIC10% ↑ in price (P) reduces quantity (Q) demanded by > 10%.
UNIT ELASTIC10% ↑ in price (P) reduces quantity (Q) demanded by = 10%
INELASTIC10% ↑ in price (P) reduces quantity (Q) demanded by < 10%.

The below elaborates:

- Percentage changes are always in absolute value terms, so any minus signs are dropped or ignored.
- Changes are always measures in percentage terms and each percentage change is computed in terms of average values of before and after price (P) and quantity (Q).

Therefore,

Price elasticity of demand
= Percentage change in quantity (Q) demanded
÷ Percentage change in price (P)

Stated alternatively, and in equation form,

$$\frac{(Q_1 - Q_0) \div (\text{average of } Q_0 \text{ and } Q_1)}{(P_1 - P_0) \div (\text{average of } P_0 \text{ and } P_1)}$$

$$\frac{\text{Change in Q as a percentage of average Q}}{\text{Change in P as a percentage of average P}}$$

Alternatively,

ELASTIC> 1
UNIT ELASTIC= 1
INELASTIC< 1

ELASTICA price (P) increase will result in a reduction of total revenue.

UNIT ELASTICA price (P) increase will result in no change in total revenue.
INELASTICA price (P) increase will result in an increase in total revenue.

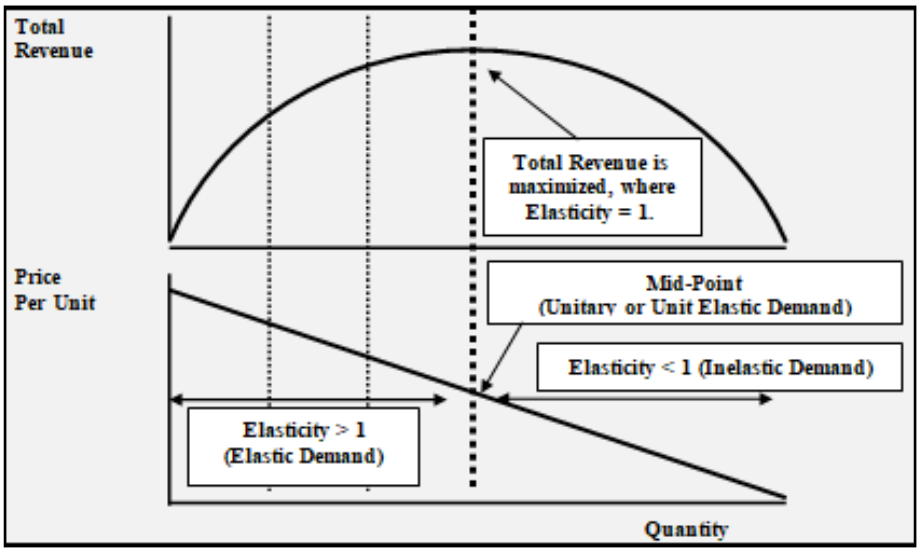
We can state elasticity (or responsiveness) in terms of any variable, where the delta represents change:

$$\textbf{Elasticity of A with respect to B} = \frac{\%\Delta \mathbf{A}}{\%\Delta \mathbf{B}}$$

Elasticity is a ratio of percentages.

We study elasticity to achieve efficiency. From the firm's perspective, the objective is to maximize revenues.

The below is novel in that it presents a firm's total revenues and price per unit basic on the quantity of unit sales. Note that total revenue is maximized at the unitary or unit elastic demand level. So, after some level of price per unit reduction, that beyond the unitary level, you actually reduce total revenues.



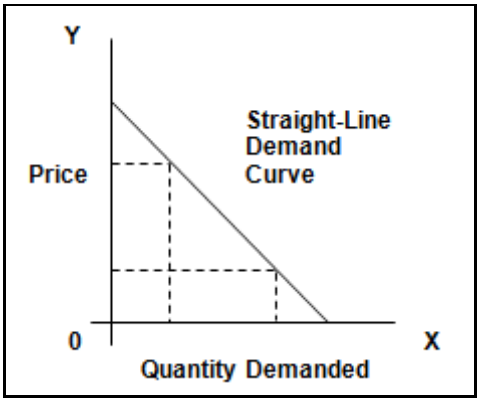
Determinants of Demand Elasticity

Consumers are sensitive and responsive to price changes to varying degrees and based on

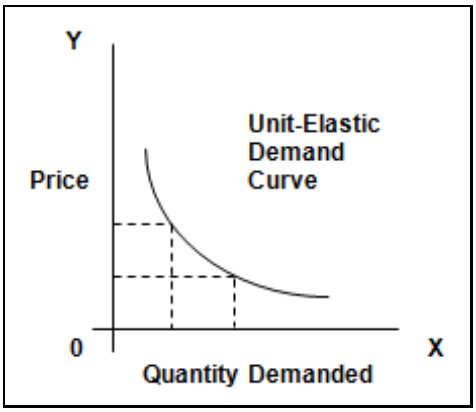
1. The nature of the good and whether or not it is a necessity;
2. The availability of substitute products or alternatives;
3. The significance or share or percentage of a consumer's budget; and
4. The passage of time.

The variety of typical demand curves follows:

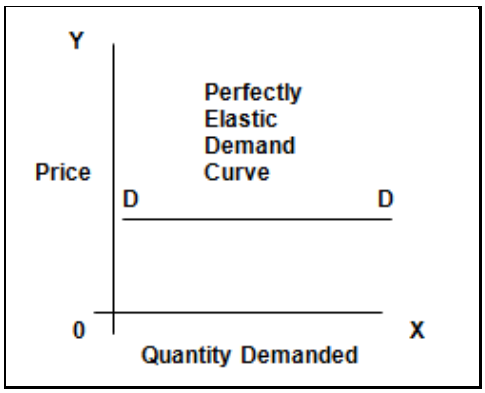
A **straight-line** demand curve is presented below:



A **unit-elastic** demand curve is presented below:



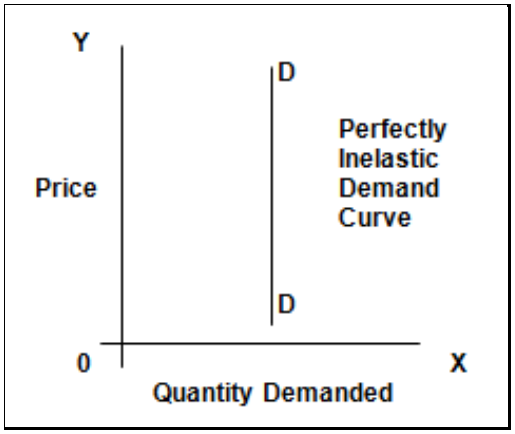
A **perfectly elastic** demand curve is a <u>horizontal</u> demand curve:



The case of perfect elasticity is one where there are many competitors, all at the same price, and any competitor raising his or her price will simply lose sales to an alternative seller at the original

price. There is no pricing power for the seller and the seller cannot increase his or her price without losing sales.

A **perfectly inelastic** demand curve is a vertical demand curve:



The case of perfect inelasticity is one where the quantity demanded remains constant regardless of the price. A good example might be the cost of medical care in the case of a life-threatening condition such as a heart attack or late stage cancer.

Complements, Substitutes and Cross Elasticity of Demand

Some goods complement each other. For example, a home theater system complements a big screen television and increases in the demand for big screen television might increase the quantity demanded for home theater systems.

Other goods have substitutes. For example, if beef prices rise, a household might substitute fish or poultry for beef and the demand for fish or poultry might increase. Perfect substitutes refer to products that are identical.

Cross elasticity of demand is examined to determine whether two products are substitutes or complements, respectively, as follows:

$$\frac{\text{\% change in quantity of home theater systems demanded}}{\text{\% change in quantity of big screen television demanded}}$$

$$\frac{\text{\% change in quantity of fish or poultry demanded}}{\text{\% change in quantity of beef demanded}}$$

- If goods are compliments, an increase in the price of one tends to "spill over" and decrease the demand for the other, so cross-elasticity is likely to be negative. For example, a substitute for a big screen television might be a surround sound system. Similarly, a substitute for attending a movie theater might be renting a pay-per-view movie at home.

- If goods are substitutes, an increase in the price of one tends to redirect consumers to the alternative and increase demand for the other, so cross-elasticity is likely to be positive.

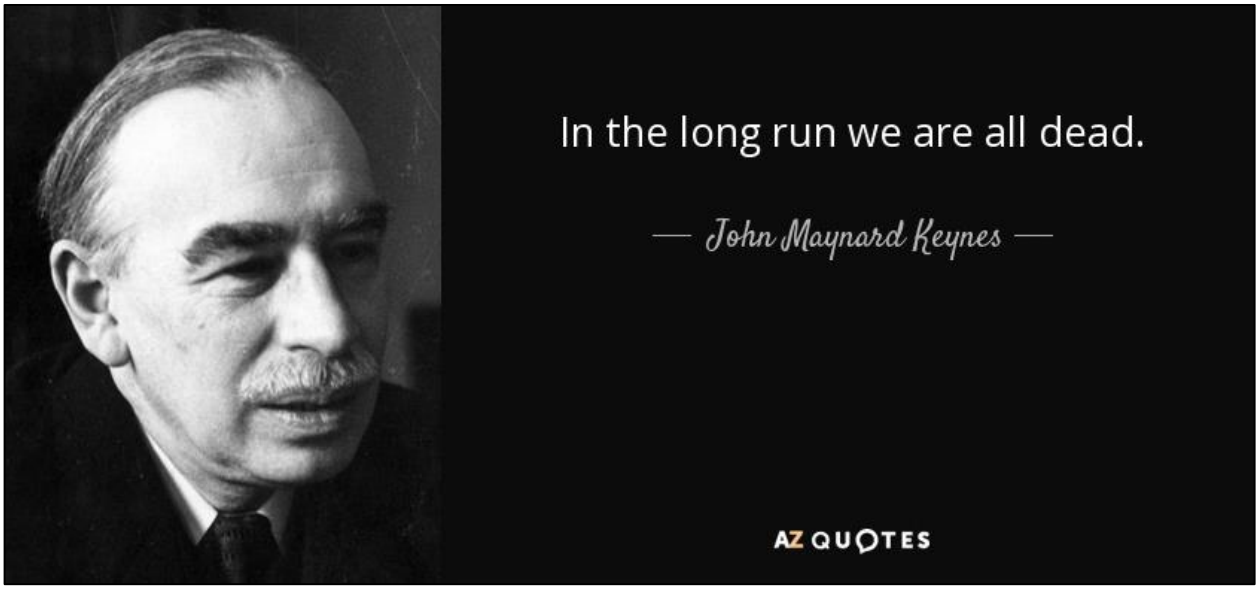
Summary

Elasticity or responsiveness is difficult to compute, precisely, or to be relied upon for lengthy periods without re-examination, as these measures change over time and represent a “snapshot” or these relations at a “point” in time. Still, an industry can be examined, and, at the firm level, your firm enjoys favorable and unfavorable changes and must prepare for challenging changes in demand and price sensitivity for your good or service.

Chapter 7
Supply – Pricing Production, Inputs & Cost

Learning Objectives

- Define short run and long run, as these terms are used by economists.
- Define fixed cost (FC), variable cost (VC), and total cost (TC), and how these relate to economies of scale and/or increasing returns to scale.
- Describe and distinguish between total physical product (TPP), average physical product (APP), and marginal physical product (MPP).
- Define marginal revenue product (MRP).



Economists tend to phrase conditions in terms of the short run and the long run, where the former describes a period, not precisely defined, but over which a firm's cost commitments cannot change or will not end, and the latter describes a period, also not precisely defined, but over which a firm's cost commitments can change and will end.

Inputs in the Short-Run or Long-Run & Variability

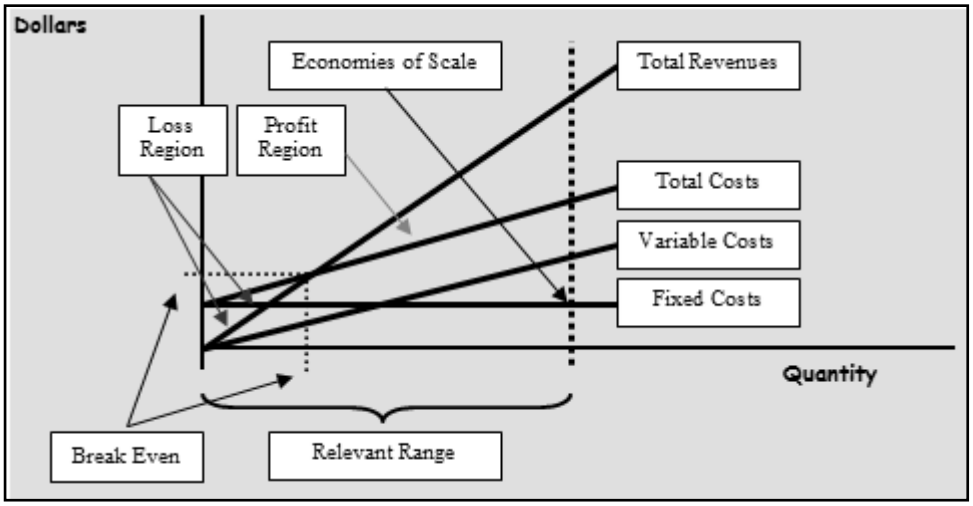
Firms make commitments that impact short run and long run decision-making. For example, the decision to build a plant represents a long-run commitment.

The economist would say these long-run commitments involving property, plant and equipment places a constraint on input choices based on **precommitted** past decisions. The accountant or business person would characterize these as **sunk costs**. These precommitments or sunk costs may not be easy to modify or alter in the short-run, but greater flexibility may exist in the long-run.

In the short-run, therefore, some costs may be **fixed** and some costs may be **variable**, where the fixed cost of an input does not rise or fall within some relevant range of activity in the short-run, the same can be said for a variable cost, and fixed costs plus variable costs equal total costs.

Total Cost = Fixed Cost + Variable Cost
or
TC = FC + VC

Below is a graphic that illustrates the total cost equals fixed cost plus variable cost equation for a for-profit firm, where total revenue, profit region, and loss region are included and labeled. Economists tend to view longer ranges, so their charts contain curved or curvilinear cost behaviors over more than a very narrow range or relevant range of activity.



The above graphic also identifies a break-even point for the firm, where revenue equals total cost, and what happens when a firm that operates at full capacity, referred to by economists as economies of scale. Economists, again, focus on industries or sectors of the economy, and economies of scale using measures at each and every point along curves or "at the margin."

Inputs in the Short-Run or Long-Run & Variability

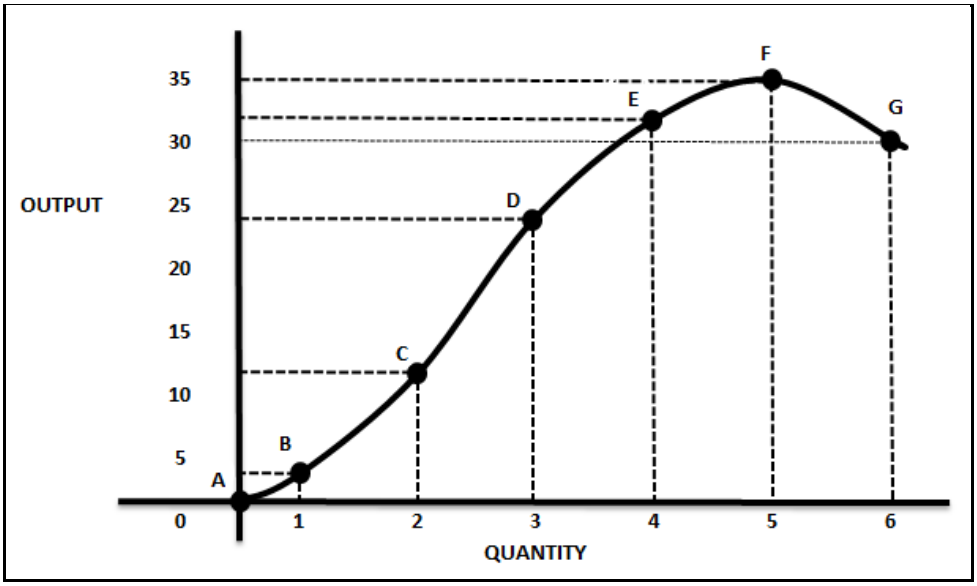
In the previous section, a linear model was presented, but economists tend to view production, input choice, and costs, at the margin, and costs tend to behave in a non-linear fashion, in the long-run. The next section defines, describes, and examines

1. Total physical product (TPP) (outputs generated from inputs),
2. Average physical product (APP) (TPP ÷ inputs),
3. Marginal physical product (MPP) (increase or decrease in TPP resulting from 1 additional or 1 less unit of input), and
4. Marginal revenue product (MRP) (increase or decrease in revenue resulting from 1 additional or 1 less unit of sales when using 1 additional or 1 less unit of input, respectively).

The Law of Diminishing Marginal Returns

The table that follows provides a fact pattern, where the [1] number of inputs and outputs, in terms of [2] total physical product (TPP), [3] marginal physical product (MPP), [4] marginal revenue product (MRP), and [5] average physical product (APP) is summarized, followed by a graphic of the same data, where each point estimate is labeled in what is referred to as a MPP curve.

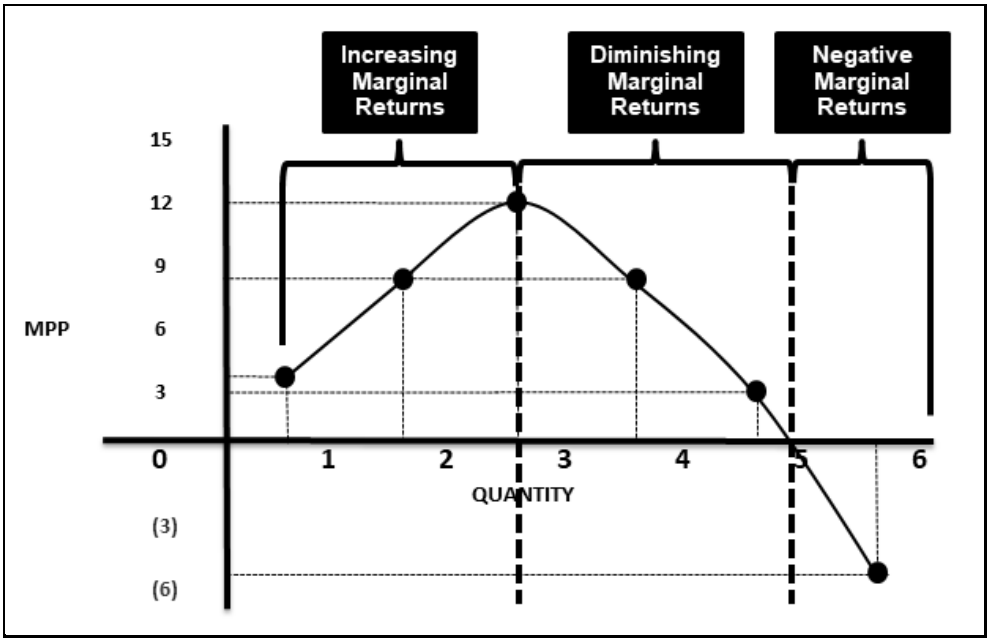
Label	[1] Number of Inputs	[2] TPP Total Physical Product Number of Outputs	[3] MPP Marginal Physical Product Number of Outputs	[4] MRP Marginal Revenue Product Number of Outputs	[5] APP Average Physical Product Number of Outputs
A	0	0		80	0
			4		
B	1	4		160	4
			8		
C	2	12		240	6
			12		
D	3	24		160	8
			8		
E	4	32		60	8
			3		
F	5	35		(100)	7
			(5)		
G	6	30		0	5



The same data, as produced above, is represented in a modified fashion, by inserting an additional column, where relevant measures are highlighted. However, in this case, areas are defined as those ranges with

- **Increasing** marginal returns,
- **Diminishing** marginal returns, and
- **Negative** marginal returns.

Label	[1] Number of Inputs		[2] TPP Total Physical Product Number of Outputs	[3] MPP Marginal Physical Product Number of Outputs	[4] MRP Marginal Revenue Product Number of Outputs	[5] APP Average Physical Product Number of Outputs
A	0		0		80	0
		0.5		4		
B	1		4		160	4
		1.5		8		
C	2		12		240	6
		2.5		12		
D	3		24		160	8
		3.5		8		
E	4		32		60	8
		4.5		3		
F	5		35		(100)	7
		5.5		(5)		
G	6		30		0	5



The objective of the above tables and graphics is to illustrate **the law of diminishing marginal returns**. Generally, an increase in the amount of any one input will ultimately lead to lower marginal returns to the expanding input measure.

Firms will seek to optimize their level of production based on the relative price of inputs and outputs. Generally,

If MRP of Input > Cost or Price, the firm will use more of these units of Input
If MRP of Input < Cost or Price, the firm will use fewer of these units of Input.

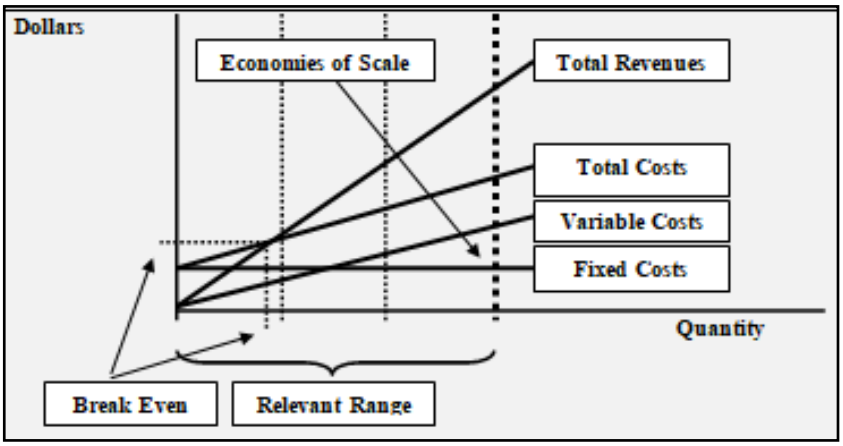
Alternatively,

MRP = MPP x Price of Output & MRP = Price of Input

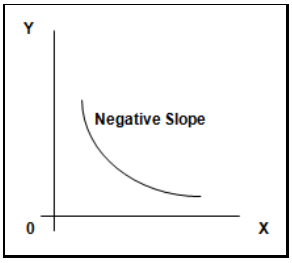
We can also examine the marginal product of labor (MPL), which is the additional output produced by one additional unit of labor. Labor-saving devices are sometimes used to replace labor with equipment. This would represent an example of a factor substitution effect, where machinery is substituted for labor. This change might be brought about and due to new technologies and technological change.

Economies and Diseconomies of Scale

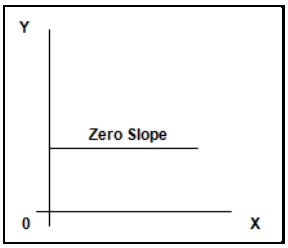
Economies of scale and diseconomies of scale are functions of operational levels, where the former minimizes average fixed cost per unit when a firm is operating at capacity and the latter represents a less efficient level of operations. They are represented in the below graphic, which is used several times in this text.



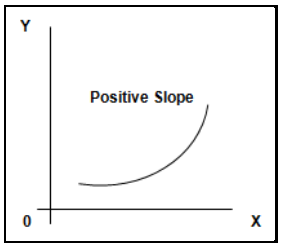
Increasing returns to scale are achieved when the average cost per unit declines. Recall the negative slope, where the curve, in this case, represents declining average cost and declining returns to scale.



Constant returns to scale are achieved and maintained when the average cost per unit holds constant. Recall the zero slope, where the curve, in this case, represents a constant average cost and constant returns to scale.



Decreasing returns to scale occur when the average cost per unit increases. Recall the positive slope, where the curve, in this case, represents an increasing average cost or decreasing returns to scale.



Summary

This chapter introduced terms like short run and long run, fixed cost, variable cost, total cost, economies of scale, diseconomies of scale, total physical product, average physical product, marginal physical product and marginal revenue product. Economists like to focus on averages and incremental measures or margins, as decisions tend to be made at the margin. They are, frequently, asked their advice for a change in a single variable, all other variables held constant.

Chapter 8
Supply - Pricing Labor

Learning Objectives

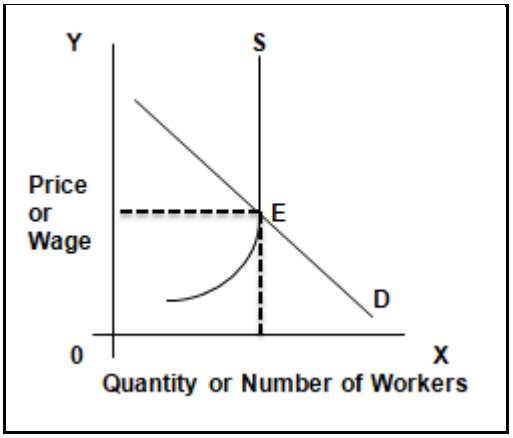
- Define human capital, human capital formation, and human capital theory.
- Define the marginal revenue product of labor (MRP_L).
- Compare and contrast the substitution effect and the income effect.
- Explain when and under what conditions a backward-bending supply curve for labor is likely.
- Explain the need for labor unions and how they facilitate collective bargaining.
- Define a monopsony and a bilateral monopoly.

Educators are in the business of human capital formation. Managers are in the business of deploying human capital to its highest and best use. Taxpayers and those supporting institutions of education are making an investment in human capital. Human capital theory focuses on measuring and maximizing returns on these investments in human capital.

Competitive Demand for Labor

Human capital and human capital theory focus on expenditures made to increase human productivity through education or alternative means. The marginal revenue product of labor (MRP_L) represents the increase in employer's revenue generated from an additional unit of employee labor or where the marginal revenue of product equals the price of a unit of production multiplied by the employee labor's marginal output (marginal physical product or MPP).

$$MRP_i = P_i \text{ X } MPP$$

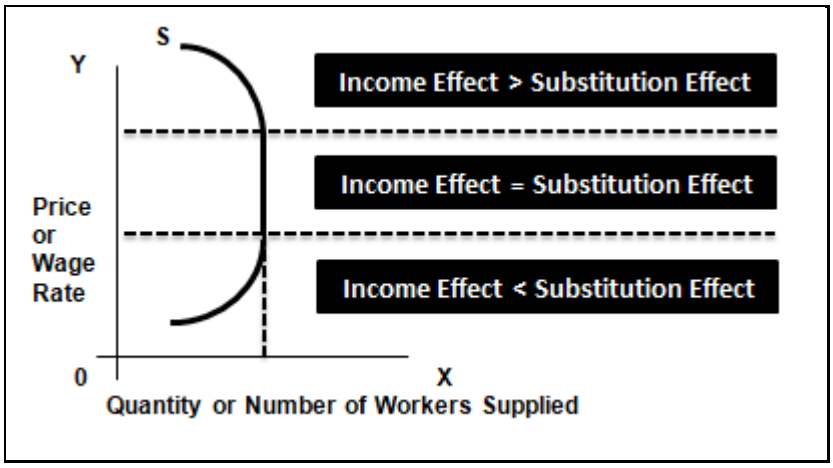


An increase in productivity raises MPP, as follows, but we cannot be certain of the net impact on MRP:

$$MRP_i = \downarrow P_i \text{ X } \uparrow MPP$$

Competitive Supply for Labor

In an environment where the supply for labor is competitive, the substitution effect and the income effect can be depicted in a single graphic, a backward-bending supply curve, as follows:



The substitution effect of the price of the rate of labor or wages is such that an increase in the price of any good results in a conversion to a substitute product not subject to the price increase. Stated alternatively, rising wages increase the price of leisure, in the form of opportunity cost, so labor will buy **less** leisure and work more.

The income effect of the price of the rate of labor or wages is such that an increase in the price or wage rate available to labor will cause them to substitute leisure for work. Stated alternatively, rising wages increase the price of leisure, but there will be less labor, as labor will buy **more** leisure and work less.

Income Effect > Substitution Effect
Income Effect = Substitution Effect
Income Effect < Substitution Effect

Labor Unions and Collective Bargaining

Labor unions and collective bargaining can interfere with open market mechanisms, but also prevent the exploitation of those unable to protect themselves against those more powerful and in possession of the capital needed to engage in activities necessary for the production of goods and services.

In the case of a monopsony, there is only one buyer of goods and services, and this single buyer controls the price. If there is only one buyer of labor in a market, that buyer sets the price of labor. In the case of a bilateral monopoly, there is a selling side monopoly and a buying side monopsony.

Invention, Innovation, the Innovative Entrepreneur and Research & Development

Inventions are the creation of innovation, innovative entrepreneurs, and research and development efforts. These activities lead to new goods and services, industries, and, we hope, a redirection of economic resources to these new and growing industries representing their highest and best use.

Summary

It is preferable to see increases in human capital formation and human productivity to raise wages, encourage those in the labor force to remain and/or new entrants or participants into the labor force. A high level of productivity and labor force participation and productivity is more likely to lead to a higher standard of living for all.

Chapter 9
Markets – Perfect Competition, Marginal Analysis, Output, Price & Profit

Learning Objectives

- Define and distinguish between total revenue (TR), total profit (TP), and economic profit.
- Describe and distinguish between total revenue (TR), average revenue (AR), and marginal revenue (MR).
- Describe and distinguish between total profit (TP), average profit (AP), and marginal profit (MP).
- Develop and present a supportable position with respect to perfect competition and its impact on the efficient allocation of resources.
- Exhibit your understanding of total revenue, total cost, total profit, marginal revenue, marginal cost, and marginal profit.
- Define total cost, mixed cost, fixed cost, and variable cost.

Perfect competition represents a condition in an industry where there are [1] many small firms producing a [2] homogeneous product, there are [3] no barriers to entry or exit, and [4] no condition of information asymmetry. The firm is a price taker.

Perfect Competition

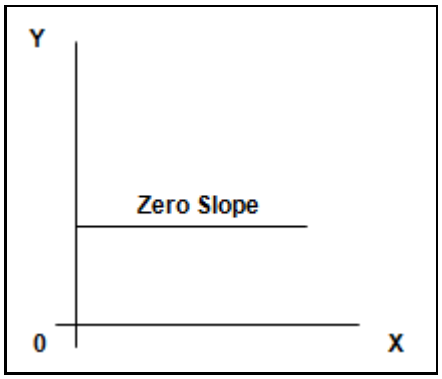
Under perfect competition, the firm's [1] demand curve, [2] average revenue curve, and [3] marginal revenue curve are all the same.

Demand Curve = Average Revenue Curve = Marginal Revenue Curve

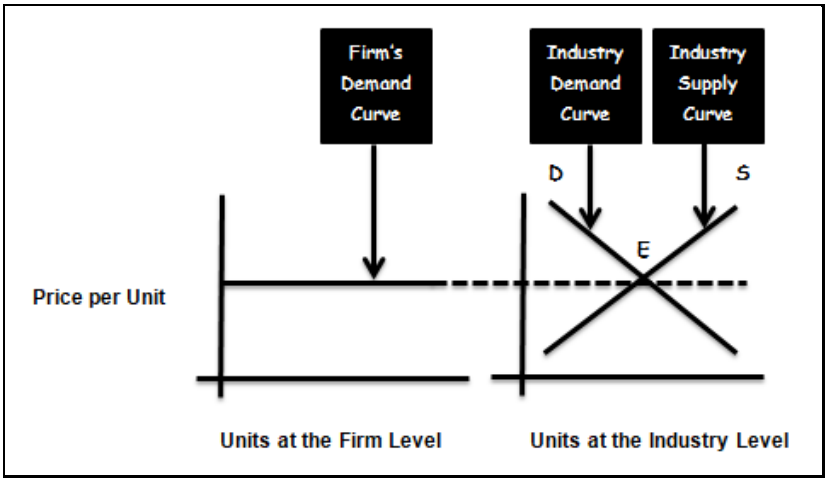
Equilibrium for a profit-maximizing firm, a price-taker, in a perfectly competitive market occurs at the output level where marginal revenue equals marginal cost equals price.

Marginal Revenue = Marginal Cost = Price

Recall the zero slope:



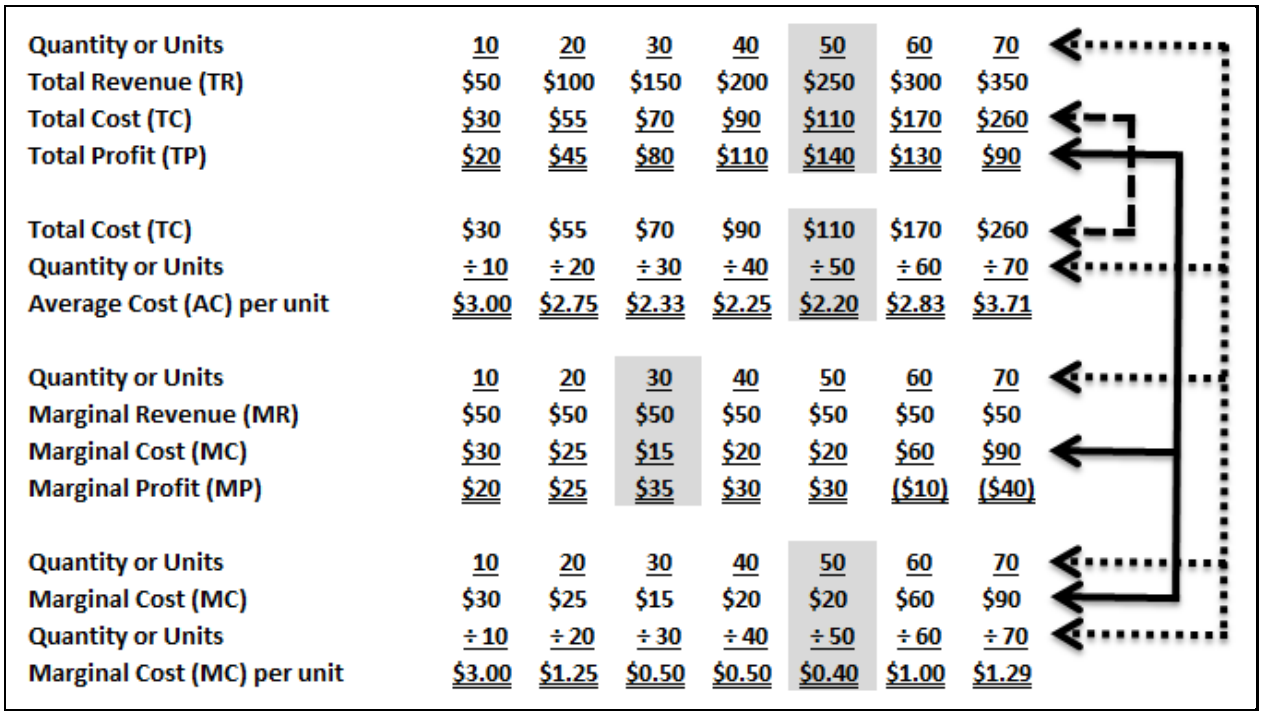
In a case of perfect competition, this is the equilibrium price (E) and the firm's demand curve in the context of the industry demand curve (D) and the industry supply curve (S):



Perfect Competition – An Illustration

Below is a comprehensive illustration, where the table that follows is exhaustive. Assume that the per unit sales price is $5 per unit:

- First, note that total revenue (TR), total cost (TC) and total profit (TP) is provided, where 50 unit sales maximize total profit at $140 (see highlighted column).
- Second, note that total cost (TC) divided by the number of units produces an average cost (AC) per unit that is minimized at $2.20 per unit (see highlighted column).
- Third, note that marginal revenue (MR) is constant between all production and unit sales levels, but marginal cost (MC) is minimized at 30 unit production and sales levels, and marginal profit (MP) is maximized at $30 and at 30 unit production and sales levels (see highlighted column). This is the only column that departs from others and is not the profit-maximizing level of production and sales.
- Fourth, note that the marginal cost (MC) per unit is minimized, at $0.40 per unit, and at 50 unit production and sales levels (see highlighted column).
- Finally, focusing on the highlighted column, [1] total profit is maximized, [2] average cost is minimized, and [3] marginal cost per unit is minimized at the 50 unit production and sales level.



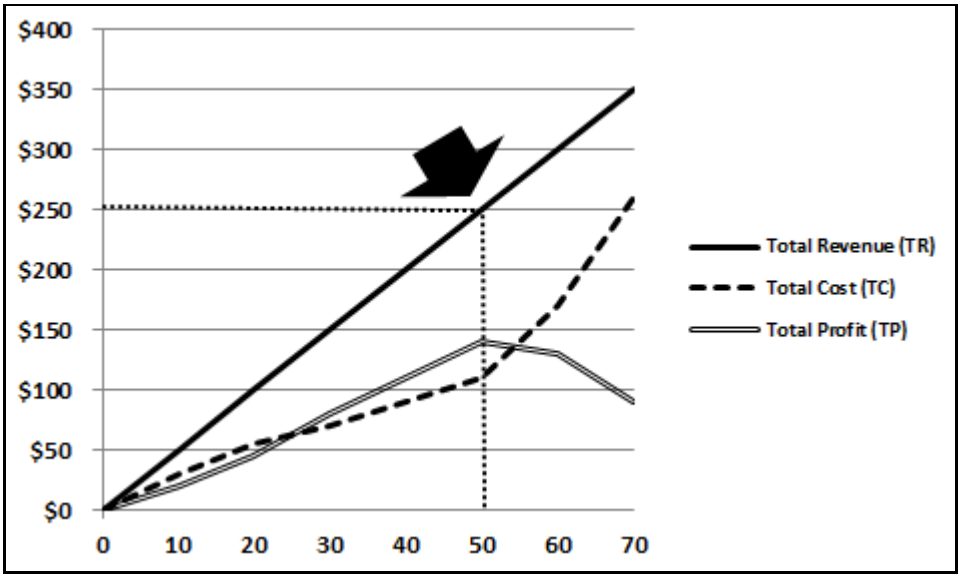
Quantity or Units	10	20	30	40	50	60	70
Total Revenue (TR)	$50	$100	$150	$200	$250	$300	$350
Total Cost (TC)	$30	$55	$70	$90	$110	$170	$260
Total Profit (TP)	$20	$45	$80	$110	$140	$130	$90
Total Cost (TC)	$30	$55	$70	$90	$110	$170	$260
Quantity or Units	÷ 10	÷ 20	÷ 30	÷ 40	÷ 50	÷ 60	÷ 70
Average Cost (AC) per unit	$3.00	$2.75	$2.33	$2.25	$2.20	$2.83	$3.71
Quantity or Units	10	20	30	40	50	60	70
Marginal Revenue (MR)	$50	$50	$50	$50	$50	$50	$50
Marginal Cost (MC)	$30	$25	$15	$20	$20	$60	$90
Marginal Profit (MP)	$20	$25	$35	$30	$30	($10)	($40)
Quantity or Units	10	20	30	40	50	60	70
Marginal Cost (MC)	$30	$25	$15	$20	$20	$60	$90
Quantity or Units	÷ 10	÷ 20	÷ 30	÷ 40	÷ 50	÷ 60	÷ 70
Marginal Cost (MC) per unit	$3.00	$1.25	$0.50	$0.50	$0.40	$1.00	$1.29

Below is the same data, but presented in a different and novel format, where the production and sales level that maximizes total profit is highlighted:

Quantity or Units	0		10		20		30		40		50		60		70
Total Revenue (TR)	$0		$50		$100		$150		$200		$250		$300		$350
Marginal Revenue (MR)		$50		$50		$50		$50		$50		$50		$50	
Total Cost (TC)	$0		$30		$55		$70		$90		$110		$170		$260
Marginal Cost (MC)		$30		$25		$15		$20		$20		$60		$90	
Total Profit (TP)	$0		$20		$45		$80		$110		$140		$130		$90
Marginal Profit (MP)		$20		$25		$35		$30		$30		($10)		($40)	

Total Revenue, Total Cost, and Total Profit

Below is a graphic representation of total revenue, total cost and total profit:

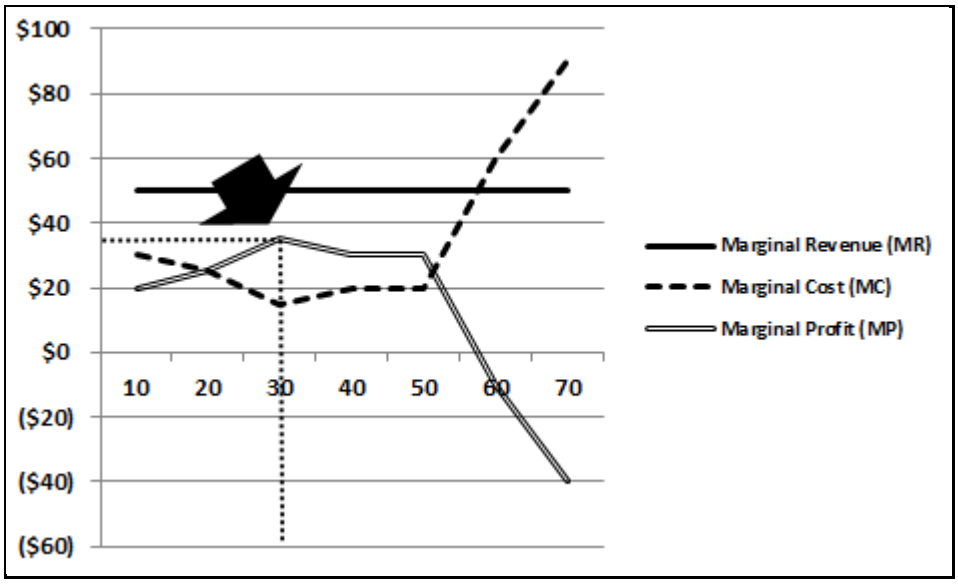


Below is the component of the table used to produce the above graphic. Note that total profit is maximized in both the above graphic and the below table at the 50 unit production and sales level:

Quantity or Units	10	20	30	40	50	60	70
Total Revenue (TR)	$50	$100	$150	$200	$250	$300	$350
Total Cost (TC)	$30	$55	$70	$90	$110	$170	$260
Total Profit (TP)	$20	$45	$80	$110	$140	$130	$90

Marginal Revenue, Marginal Cost, and Marginal Profit

Below is a graphic representation of marginal revenue, marginal cost and marginal profit:



Below is the component of the table used to produce the above graphic. Note that total profit is maximized in both the above graphic and the below table at the 30 unit production and sales level:

Quantity or Units	10	20	30	40	50	60	70
Marginal Revenue (MR)	$50	$50	$50	$50	$50	$50	$50
Marginal Cost (MC)	$30	$25	$15	$20	$20	$60	$90
Marginal Profit (MP)	$20	$25	$35	$30	$30	($10)	($40)

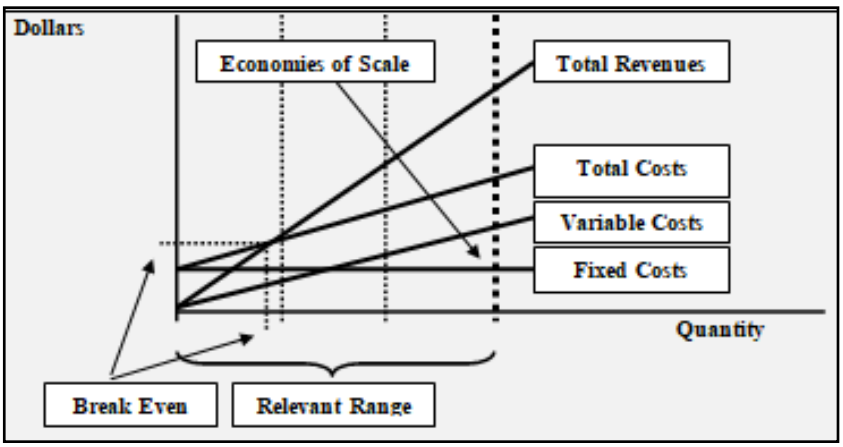
This 30 unit marginal profit-maximizing level can be confusing, but it is not. Consider the following:

Total cost includes both fixed cost and variable cost. Fixed cost does not change over what is referred to as a relevant range of activity. Variable cost is fixed, but on a per unit basis, and, also, does not change over a relevant range of activity. Because we have not separated total cost into fixed cost and variable cost components, we are examining cost behavior over several relevant ranges of activity.

So, what could explain the higher marginal profit at 30 units (see above shaded table), but the lower total profit, where total profit is maximized at 50 units produced and sold (see below shaded table)?

Quantity or Units	10	20	30	40	50	60	70
Total Revenue (TR)	$50	$100	$150	$200	$250	$300	$350
Total Cost (TC)	$30	$55	$70	$90	$110	$170	$260
Total Profit (TP)	$20	$45	$80	$110	$140	$130	$90

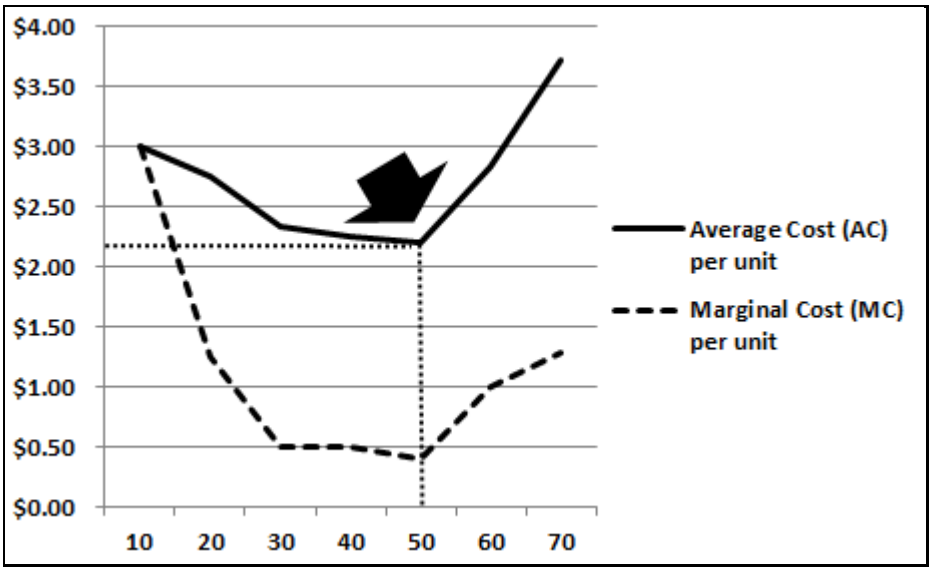
Clearly, between the production and sales levels of 30 units and 50 units, fixed cost must be increasing. See the below:



Economists do not address this issue in micro economics texts, but they do in later courses in accounting, finance, marketing and management. For now, we will stick with the example used by economists, where the focus is on the curvilinear cost behavior.

Average Cost per unit and Marginal Cost per unit

Below is a graphic representation of average cost per unit and marginal cost per unit:



Below is the component of the table used to produce the above graphic. Note that average cost is minimized and marginal cost per unit is minimized both the above graphic and the below table at the 50 unit production and sales level:

Quantity or Units	10	20	30	40	50	60	70
Marginal Cost (MC)	$30	$25	$15	$20	$20	$60	$90
Quantity or Units	÷ 10	÷ 20	÷ 30	÷ 40	÷ 50	÷ 60	÷ 70
Marginal Cost (MC) per unit	$3.00	$1.25	$0.50	$0.50	$0.40	$1.00	$1.29

Total Cost (TC)	**$30**	**$55**	**$70**	**$90**	**$110**	**$170**	**$260**
Quantity or Units	**÷ 10**	**÷ 20**	**÷ 30**	**÷ 40**	**÷ 50**	**÷ 60**	**÷ 70**
Average Cost (AC) per unit	**$3.00**	**$2.75**	**$2.33**	**$2.25**	**$2.20**	**$2.83**	**$3.71**

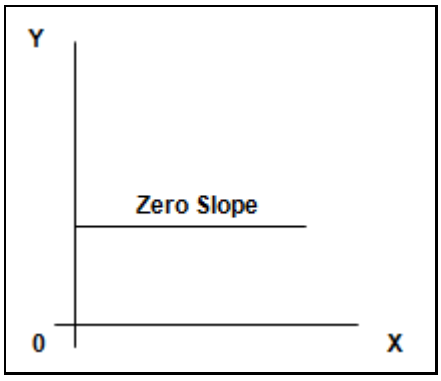
Perfect Competition – Basic Formulas

If total revenue (TR) is higher than total cost (TC), the firm earns a profit. If total revenue equals total cost, there is no loss and there is no profit and the firm breaks even. If total cost is higher than total revenue, the firm earns a profit.

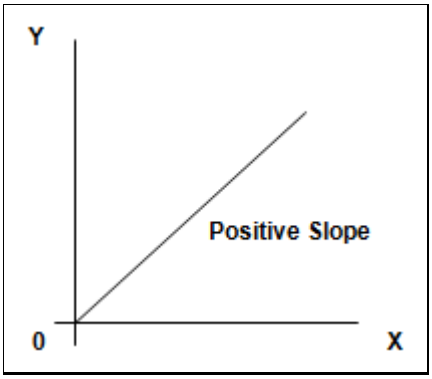
LOSS = TR < TC
BREAK-EVEN = NO LOSS & NO PROFIT where TR = TC
PROFIT = TR > TC

Perfect Competition – When Does a Firm Shut Down?

Total cost is usually a mixed cost, in that it contains both fixed cost and variable cost components. A fixed cost has a zero slope and does not change within the relevant range of activity, volume, or sales. A good example of a fixed cost is rent.

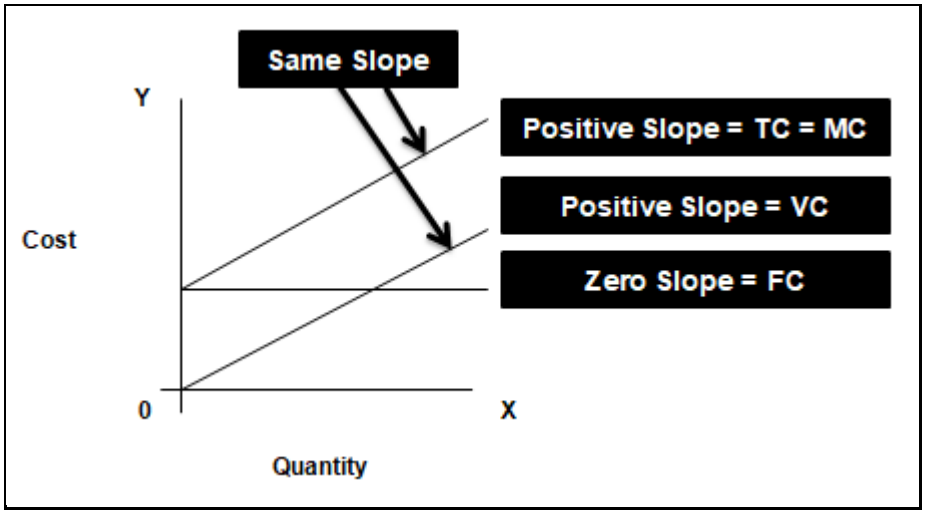


A variable cost has a positive slope that does not change within a relevant range of activity. A good example of a variable cost is cost of goods sold for a retailer, where, for example they buy a product, wholesale, for $2, and sell it, retail, for $5.



Most costs are mixed and have both fixed cost and variable components. For example, if you have cable television you pay a fixed cost of $100 for basic channels, but a pay-per-view film might cost $10. In this case, your monthly cost is fixed at a $100 minimum, but you pay an additional $10 that varies, depending on your consumption of pay-per-view movies.

The above example is from a consumer's perspective, but producer's or suppliers have [1] total costs (TCs) or mixed costs (MCs) that are [2] mixed costs (MCs) and contain both [3] fixed cost (FC) and [4] variable cost (VC) components, as well.

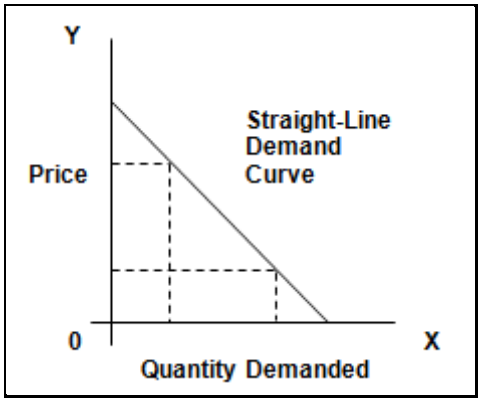


In the short-run, fixed costs are presumed to be sunk costs that cannot be avoided. For example, a long-term lease payment at $1,000 per month is both a fixed cost and a sunk cost. In this case, and in the short-run, a producer or supplier will choose to remain operational as long as they cover their variable cost, since the fixed cost is unavoidable. They will operate at a loss, but they will minimize their loss.

CONTINUE TO OPERATE IF TR = VC
CONTINUE TO OPERATE IF TR > VC
CONTINUE TO OPERATE IF [TC – TR] < [TC – VC]

Price & Quantity

Firms can control the price they charge for a good or service, but not the quantity demanded and sold at that price. The market determines this. Recall the basic, linear demand curve presented early in this text.



The Operational Definition of Profit

In accounting and finance, profit is defined, as follows:

Total profit = Total revenue – Total cost

However, the economist defines profit, differently, as follows:

Total profit = Total revenue – Total cost *(including opportunity cost)*

Furthermore, the economist, in determining whether or not the firm has made "the optimal decision," and, specifically

1. If economic profit is positive, the firm has made an optimal decision.
2. If economic profit is zero, the firm has made a satisfactory decision.
3. If economic profit is negative, the firm has made a non-optimal decision.

Alternatively,

Economic profit = Accounting profit – Opportunity cost

Summary

Perfect competition represents a case where there are many competitors in an industry or segment of the economy. These firms seek profit-maximizing strategies, but may choose to operate at a loss, in the short-term, if they can cover their variable costs and do not expect unprofitable conditions to extend to the long-term.

Chapter 10
Markets - Perfect Competition v. Monopoly

Learning Objectives

- In the context of the production possibilities frontier, describe how scarce or limited resources might be efficiently allocated or inefficiently allocated under conditions of pure competition and monopoly.
- Explain how externalities might be beneficial or detrimental.
- Define, compare and contrast marginal social cost (MSC) and marginal private cost (MPC).
- Define, compare and contrast marginal social benefit (MSB) and marginal private benefit (MPB).
- Define and provide examples of public goods and private goods; depletable and excludable commodities.
- Define moral hazard in the context of agents and principals or agency theory.
- Compare and contrast monopoly, oligopoly and pure or perfect competition; cartel.
- Describe price leadership, price war, and sales maximization.
- Explain conditions where there might be a kinked demand curve.
- Explain when a price may be referred to as “sticky.”
- Define payoff matrix and how it relates to maximin criterion.
- Describe conditions for a dominant strategy to be said to exist.
- Compare and contrast Nash equilibrium, zero-sum game, a repeated game, credible threat, and a perfectly contestable market.

Resource allocation is imperfect under any economic form, but we attempt to match the form to the resource to be allocated. One of the problems in optimizing the allocation of scarce resources is imperfect information.

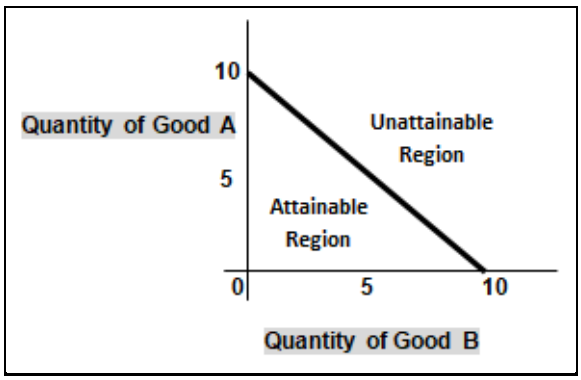
A market is said to be perfectly contestable if entry and exit are [1] costless and [2] unimpeded. However, this is frequently not the case for monopolies, oligopolies and cartels. Frequently, these are capital-intensive industries or segments or sectors of the economy.

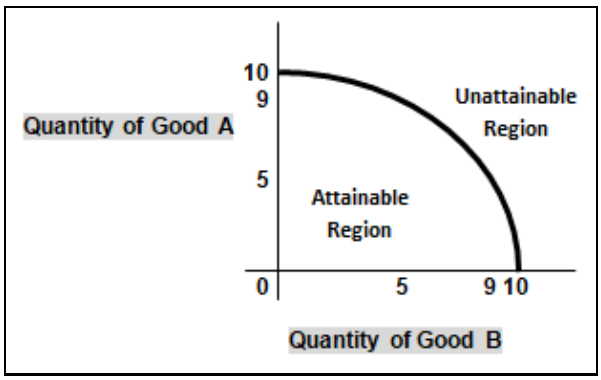
Resource Allocation and Efficiency

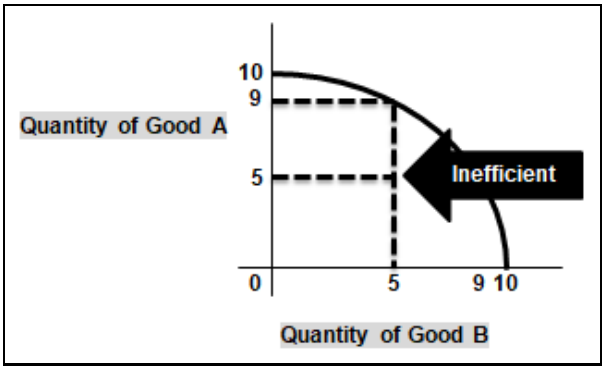
Open markets under pure competition may

- Experience boom and bust cycles.
- Distribute income unequally and contribute to inequality.
- May allocate resources inefficiently among market participants or between current and future periods.
- May not deal efficiently with externalities like pollution.
- May not be capable of providing certain public goods, like defense.

Recall that the production possibilities frontier (PPF) provides a model for trade-offs between two goods or services. Recall that it can be presented in a linear or curvilinear form and represents a budget line.







In cases of pure competition, efficient allocations are made where prices equal marginal cost.

INEFFICIENCY → P > MC
EFFICIENCY → P = MC
INEFFICIENCY → P < MC

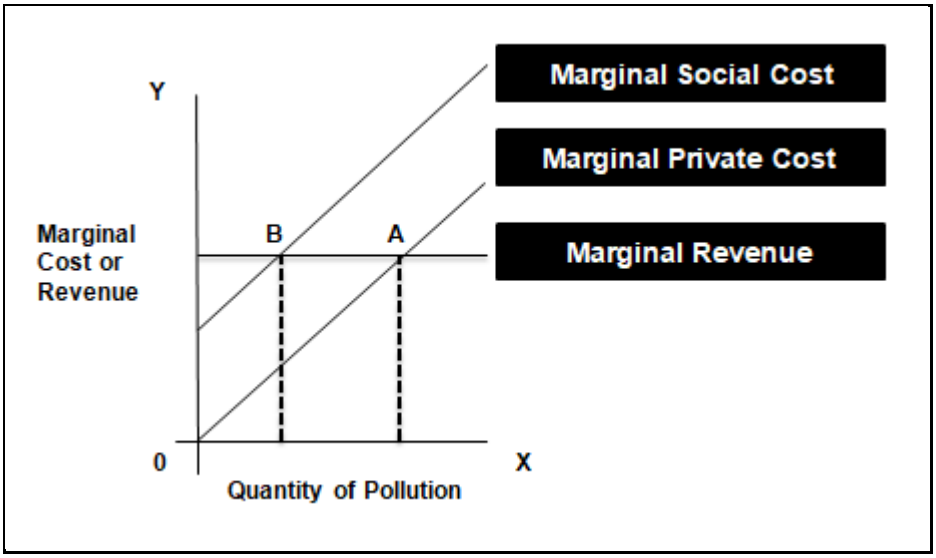
Externalities

We can have beneficial externalities or detrimental externalities. Marginal damage cost (MDC) is the additional harm done when a detrimental externality is increased by one unit. A tax or penalty imposed on a profit-maximizing firm may reduce MDC if the tax or penalty imposed is equal to the MDC.

An example might include additional pollutants dumped into a drinking water supply. The Coarse Theorem suggests that private bargaining can solve detrimental externality problems without regulatory or government intervention.

Marginal social cost (MSC) is the sum of marginal private cost (MPC) plus additional cost, which can be positive or negative, borne by those not compensated for any resulting damage. MPC is the amount that a consumer pays to consume one additional unit of a particular good.

MARGINAL SOCIAL COST = MARGINAL PRIVATE COST + ADDITIONAL COST
MSC = MPC + ADDITIONAL COST



Similarly, marginal social benefit (MSB) is the sum of marginal private benefit (MPB) plus additional cost, which can be positive or negative, received by those not paying for the benefit.

MARGINAL SOCIAL BENEFIT = MARGINAL PRIVATE BENEFIT + ADDITIONAL BENEFIT
MSB = MPB + ADDITIONAL BENEFIT

Public goods like clean air are goods not depleted by an additional user, where it is difficult or impossible to exclude those unwilling to pay for the benefit. Consumers are non-rivals in the

consumption of public goods, in that one person's consumption does not interfere with another person's consumption. No one can be excluded from enjoying the benefits of a public good.

This raises a free-rider problem. Because all enjoy public goods, whether or not they choose to pay for them, many are unwilling to pay for them. Public goods tend to be very costly, and not dependent on a single individual's willingness to pay. This is referred to as the drop-in-the-bucket problem.

Economists study and attempt to define optimal levels of public good provision, but this is a value-judgment, and difficult in terms of reaching consensus. This variety of individual preferences is referred to as social choice. In fact, the impossibility theorem has demonstrated that no system of individual preference aggregation will always produce consistent, non-arbitrary decisions.

The voting paradox refers to the practice of majority-rule voting can lead to inconsistent results. Logrolling, for example, occurs when Congressional representatives trade votes to get specific pieces of legislation passed.

Private goods are both depletable and excludable. Social overhead capital is the term used to describe basic infrastructure projects and include roads, power generation, and irrigation systems.

Agency Theory

Agency theory can be used to model conditions that can create market failures. A market failure occurs when resources are not efficiently allocated, resulting in waste or lost surplus. Imperfect information can contribute to market failures and inefficiency, where efficiency is operationally defined as the condition in which the economy is producing what consumers want at the lowest possible cost.

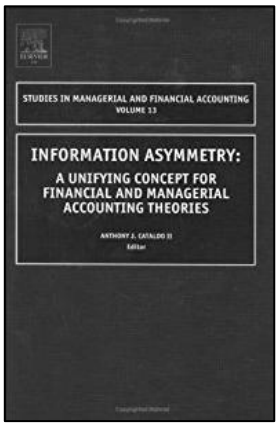
Agents are hired by principals, to act in their best interest. However, based on all available information (information theory and conditions of asymmetric information), an error in the selection of an agent (pre-contractual and making possible adverse selection) can result in moral hazard (post-contractual).

Buyers and sellers may engage in actions to communicate the quality of a product or decision in some form of market signaling or mechanism design to overcome problems associated with asymmetric information. Of course, some persons are risk-averse, others are risk neutral, and still others are risk-loving.

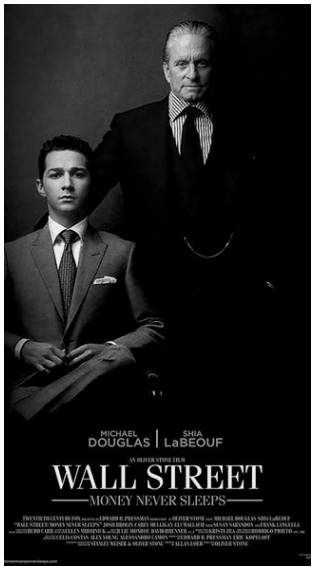
There are, of course, constraints, even in conditions of perfect information. Pareto efficiency or Pareto optimality is a condition in which no changes are possible that will make some better off without making others worse off.

Moral Hazard

"…when somebody takes your money and is not responsible for it."



Moral hazard is used **8 times** in the film, **Wall Street: Money Never Sleeps** (2010). All 8 script excerpts, in context, follow:



What about **moral hazard**, Jack? We bail out Keller Zabel, who's to say it's not gonna happen again and again? You vindictive bastard. Who are you to talk about **moral hazard**?

Thirteen banks were approached in 2000 to rescue Churchill Schwartz. Bretton James' division was over-invested in the Internet bubble collapse. Each bank was going to put up 100 million, but Zabel said no. Churchill Schwartz almost went down but was backstopped by a conglomerate of nine banks. Okay, so not only did they survive this, but they came back and ate our fricking lunch. **Moral hazard**.

Let me tell you something, Bretton. You are not my mentor. Lou Zabel was. And whether you admit it or not, your raid destroyed Zabel and forced him to suicide. So you may talk about **moral hazard**. You are the **moral hazard**. You are the worst kind of toxic debt this system's polluted with.

And can I ask you a question, Mr. Gekko? Certainly, Elise. What exactly is "**moral hazard**"? **Moral hazard**, that's when somebody takes your money and is not responsible for it.

You know what **moral hazard** is, Ma? You know what that means? It means that once you get bailed out, what's to stop you from taking another shot?

Monopolistic and Oligopolistic Competition – In Context

Below is a tabular summary of selected organizations and their characteristics:

	Number of Firms	Ease of Entry	Product Characteristics	Price as a Decision Variable
Monopoly	1	No	Variations	Yes; Market-Based
Monopolistic Competition	Many	Yes	Differentiated	Yes; Price & Quality
Oligopoly	Few	Limited	Any	Yes; Strategic
Perfect Competition	Many	Yes	Homogeneous	No; Market-Based

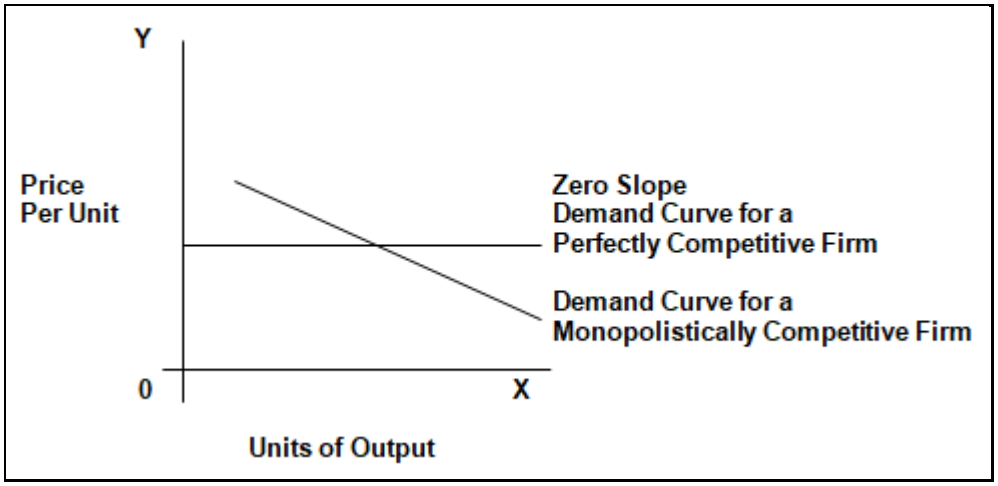
A pure monopoly is [1] an industry with a single firm, [2] with barriers to entry, and [3] no close substitutes. Unless tempered by regulation, they possess absolute market power.

Monopolies are permitted, and monitored, in those cases where a single supplier is the most efficient alternative – the case of the natural monopoly. Similarly, in the private sector, a patent represents a barrier to entry, granting exclusive use of a product or process to the inventor.

Monopolistic competition is the same as a perfectly competitive market, but with heterogeneous products. Monopolies:

- Have numerous participants – many small buyers and sellers.
- Freedom from exit and entry.
- Perfect information.
- Heterogeneous products – buyers perceive each seller's product as different.

Oligopolistic competition has few producers or sellers, and some are large enough to influence the market. Typically, the larger firms are the price leaders, setting the price for the industry. Oligopolies tend to strategically product differentiate to achieve market share and dominance. Product differentiation can be [1] horizontal or [2] vertical, where the former differentiates where products are better for some and worse for others, whereas, the latter is a case where the product is superior for all. Product differentiation reduces the elasticity of demand, as follows:



Duopolistic competition or a two-competitor oligopoly may serve the public more efficiently and cost-effectively than a monopoly, where some competition is desirable. A duopoly is also characterized as a two-firm oligopoly.

Cartels are not legal in the U.S., as they are anti-competitive, but represent a group of sellers, collaborating to control quantities produced and price in an effort to achieve monopolistic control. The Organization of the Petroleum Exporting Countries (OPEC) is, perhaps, the most well-known cartel in the world.

OPEC colludes with price- and quantity-fixing agreements. Tacit collusion occurs when these agreements are implicit.

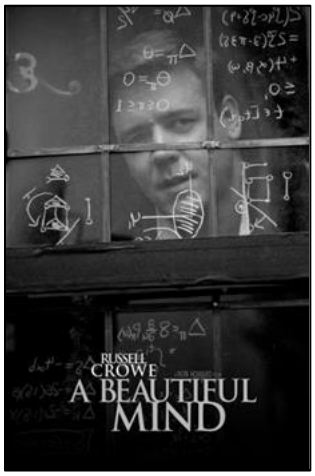
Price wars can occur, where a firm in an industry sets its price below its cost to achieve sales maximization. A competitor may follow with their own reduction in sales price, and so on. In these cases, the objective is not to maximize profits, but to maximize revenue, and, if predatory, to gain market share, possibly for the long-term.

Price discrimination occurs when different prices are charged to different customers for identical products. Perfect price discrimination occurs when a firm maximizes the amount charged to buyers based on their willingness to pay.

Game Theory

Game theory, also referred to as behavioral game theory, is a particular branch of behavioral economics most widely used to examine oligopolies. It merges psychology with economics. Using strategy, dominant strategy and a payoff matrix, game theory examines the behavior of participants in economic games.

A dominant strategy produces the optimal outcome regardless of the behavior of the opponent. The best known dominant strategy is that of the prisoners' dilemma. This is a game in which player cooperation is prevented to the extent that both or all are worse off than if cooperation were attainable.



For example, in the case of the dominant strategy, one competitor achieves the highest profit or payoff, regardless of the actions taken by competitors. Payoffs are summed and an expected value is a weighted average of the probabilities of the payoffs. (Similarly, expected utility is the sum of all utilities from all possible decision outcomes, weighted by the probability of each occurring and diminishing marginal utility describes lesser levels of incremental satisfaction associated with the consumption of a marginal or incremental unit of the same good.)

A fair game or fair bet is one where the expected value is zero. Some strategies examined by economists are not dominant strategies. The maximin criterion requires participants or subjects to maximize payoffs in a purely competitive environment.

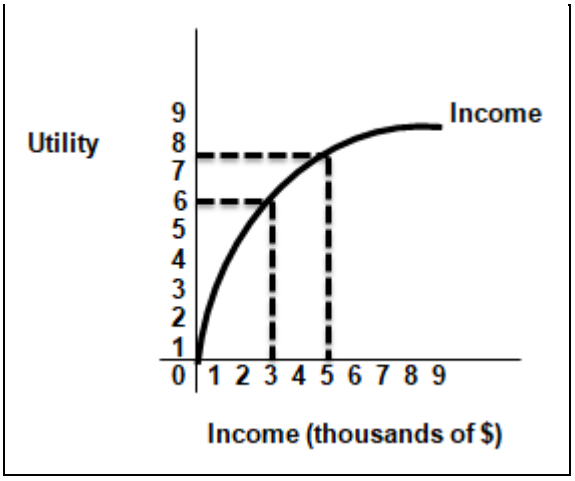
The Nash equilibrium is a rational strategy where each player selects a profit-maximizing strategy based on the other player's choice or strategy. An excellent film and an entertaining way to learn more about the Nash equilibrium is to watch the film, **A Beautiful Mind** (2001).

The zero-sum game is one in which for one player to win the other player must lose. Both cannot win. The repeated game is one that is played a number of times. A tit-for-tat strategy is one in which a player responds in kind to an opponent.

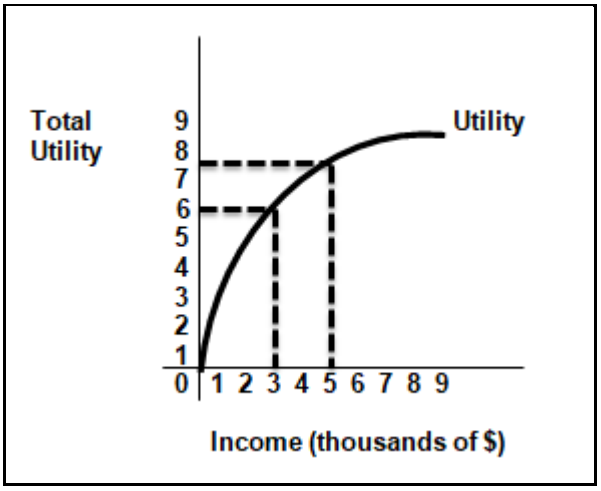
Rewards can be used in games, but punishments or threats can also be used. A credible threat is a threat that does not harm the participant or subject making the threat.

Diminishing Marginal Utility

The following graphic illustrates the relationship between utility and income, where the consumer achieves diminishing marginal utility from the consumption additional units, even as the consumer's income rises.



The below graphic is comparable to the above, but, in this case, risk aversion is the focus and context. In this case, the question that arises is whether or not the consumer is willing to increase his or her utility from 6 to about 7.5 (7.5 ÷ 6 or about 25% increase in utility; see below graphic), when his or her income level increases from about $3 thousand to $5 thousand (5 ÷ 3 or about 67% increase in income; see below graphic).



Summary

In some cases, the most efficient or optimal allocation of scarce economic resources can be achieved by pure competition. In other cases, optimization is best achieved by regulated monopolies. Economists examine these issues of scarce economic resource allocation, given all available public information. But even information can be asymmetric and represents an economic resource. While perfection and its pursuit is desirable, it is likely to remain unachievable.

Chapter 11
Regulation – Are Free Markets Good or Bad?

Learning Objectives

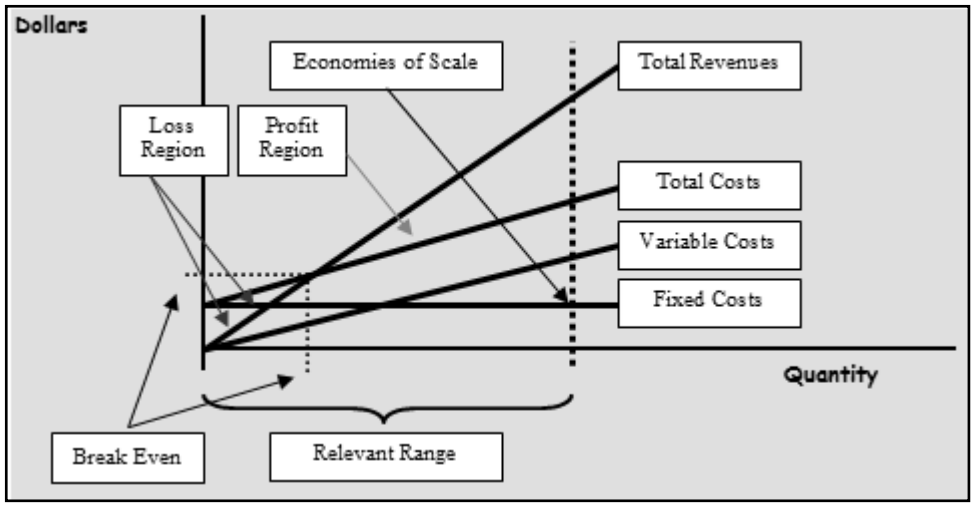
- Define economies of scale, economies of scope and cross-subsidization.
- Describe conditions when monopoly might best serve the public interest.
- Explain why the U.S. has anti-trust policies and regulations.
- Define the Herfindahl-Hirschman Index and how it is used to examine industry concentration.
- Define predatory pricing and how bundling does or does not serve the best interests of the consuming public.
- Define price cap and provide examples of direct controls.
- Describe pollution charges and emission permits.

Monopolies may serve the best interests of the consuming public by achieving economies of scale in capital-intensive industries, like utilities, but could also engage in predatory pricing strategies harmful to the consuming public. Anti-trust laws and regulations are designed to protect the consuming public from these behaviors.

Monopolies & Economies of Scale

Examples of monopolies include utility companies, where economies of scale are necessary to best serve the public interest. An example would be a provider of natural gas. You would not want multiple natural gas lines delivering this product into your home, as it would require multiple excavations and would simply not be as cost-effective as a monopoly with only a single incidence of the pipe required for delivery. The same could be said for water, sewer and electrical service.

As the below graphic depicts, operating at economies of scale minimizes the fixed costs, total costs, and capital expenditures. Alternatively stated, economies of scale minimize the cost per unit of natural gas, water, sewer service, or electricity when these capital intensive products or services are delivered at or near capacity.



In the cases of utilities, the monopoly is granted by a regulatory authority and, if a publicly traded entity, they may request and receive a guaranteed market-based rate of return through incremental utility rate increases. These mechanisms control the monopoly and prevent it from abuses the rights granted to it by the regulatory authority.

Unless regulated, monopolistic power

- Reduces the wealth of consumers in an unfair or inequitable fashion,
- Leads to resource misallocation, as above market rates might be imposed, and
- Resource misallocation in the short-run produces an obstacle to efficiency and innovation in the long-run.

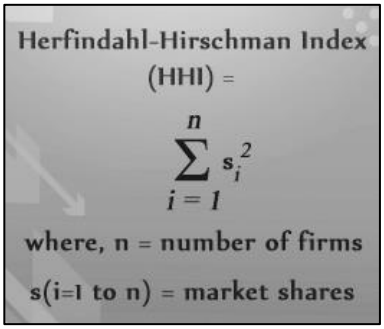
The same can be said of oligopolies, as industries mature and monopolistic power might evolve. It is, for this and the above reasons that anti-trust policies have been established by the

[1] **Sherman Act of 1890**, which prohibits contracts restraining trade, using the "rule of reason";
[2] **Clayton Act of 1914** (establishing the Federal Trade Commission), which prohibits price discrimination or contract exclusivity and tying arrangements, price discrimination, and unlimited mergers that reduce competition;
[3] **Robinson-Patman Act of 1936**, which prohibits other than cost-based discount provided for large purchases;
[4] **Celler-Kefauver Antimerger Act of 1950**, which prohibits the acquisition of the assets of a competing firm and trending toward a monopoly, extended government authority to control mergers;
[5] **Tunney Act of 1974**, which provides a public forum for discussion and requires Government publication of violation-based settlements; and
[6] **Hardt-Scott-Rodino Act of 1976**, which requires that mergers and acquisitions intentions be provided to the Department of Justice and Federal Trade Commission for review of the competitive effects of these proposals.

Antitrust policy and laws protect the consuming public from predatory pricing practices made possible when a firm approaches or achieves monopolistic power, by preventing the formation of monopolies or "breaking up" firms that have monopolistic power and can control prices charged to consumers. The presumption is that a competitive environment is in the best interests of the consuming public, as it encourages innovation and will, naturally, lead to a reduction in the price of goods and services.

Bundling may or may not best serve the interests of the consuming public, depending on the motivation for the practice. If the motivation is for the firm to achieve cost savings that are, then, passed on to the consuming public, the practice is less likely to be perceived as predatory. An example of bundling is the so-called "triple-play" that some cable companies make available to consumers for [1] telephone, [2] Internet, and [3] cable television, at a reduced cost, when compared to purchasing these services separately.

The Herfindahl-Hirschman Index



Industry concentration is measured by using a concentration ratio, where the Herfindahl-Hirschman Index (HHI) represents a widely used measure of industry concentration. It is computed by adding the market shares of firms in the industry. It can measure between 10,000 (100% squared) to zero (pure or perfect competition).

Operational definitions follow:

HHI < 1,000 = Market Concentration is Low

HHI > 1,800 – Market Concentration is High

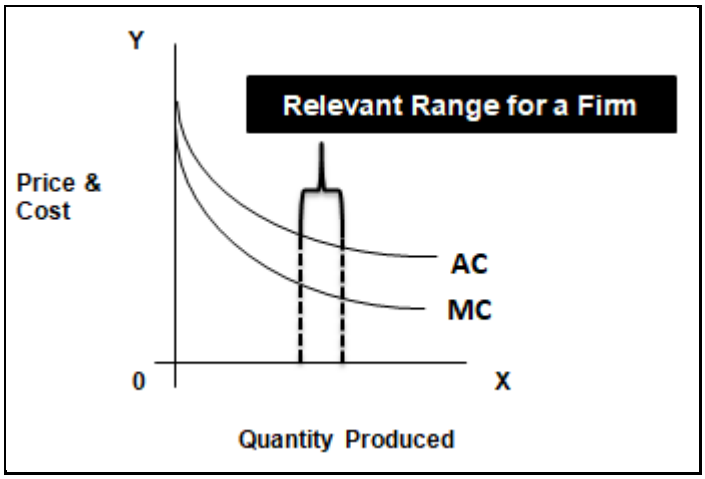
Below is an example of how the HHI is used, where industry A has 4 competitors and industry B has 16 competitors. Note that industry A has an HHI > 1,800 and industry B has in HHI < 1,000:

INDUSTRY A Less Competitive 4 Competitors		INDUSTRY B More Competitive 16 Competitors	
Percent Market Share	Squared Market Share	Percent Market Share	Squared Market Share
45	2,025	15	225
25	625	12	144
20	400	10	100
10	100	10	100
100	3,150	9	81
		8	64
		8	64
		7	49
		7	49
		5	25
		3	9
		2	4
		1	1
		1	1
		1	1
		1	1
		100	918

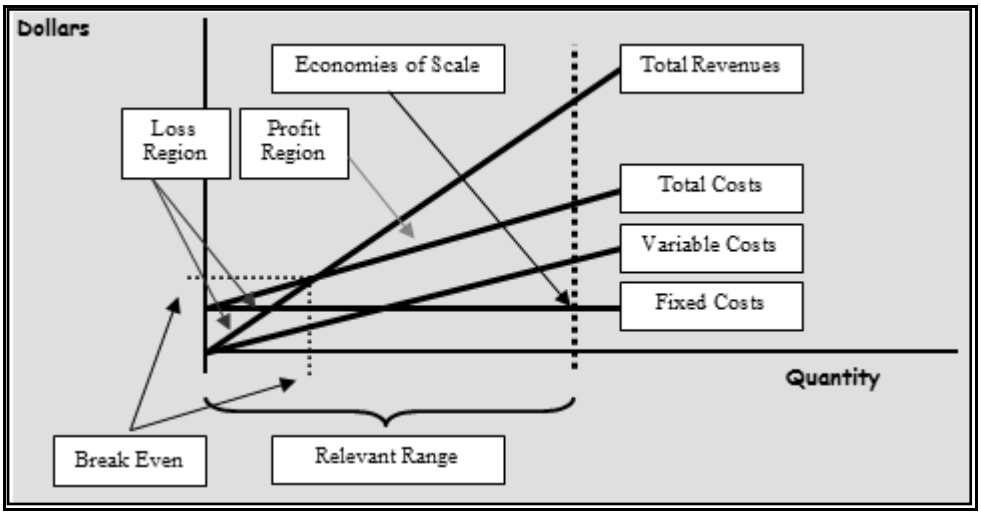
In capital intensive industries, there are barriers to entry and these barriers (or high fixed costs) can prevent competition. It is, for this reason, that these natural monopolies must be regulated. These regulations protect the consumer from predatory pricing that might otherwise evolve and persist and be harmful to the consuming public.

Economies of Scope & Cross-Subsidization

Economists tend to focus on all measures, at the margin, so they examine average and marginal measures like average cost (AC) or marginal cost (MC) (see below):



At the firm level, a very specific or much narrower relevant range of activity or quantity produced and\or sold becomes the focus, where, within that relevant range of activity, it is easier to more precisely examine cost behavior and separate mixed or total costs into their fixed and variable components and economies of scale (see below):



Economies of scope or economies of scale can sometimes be achieved by monopolies in capital intensive industries, like utilities, where the consuming public is best served by these regulated monopolies. The objective, in this case, is to minimize the average cost or the fixed cost per unit or kilowatt hour, or gallon of purified water or sewer service, and so on.

Cross-subsidization refers to a scenario where higher prices are charged to one class of customers to finance lower prices to another (subsidized) customer group. Airlines and telecommunication companies, for example, are regulated to ensure that less populated areas are subsidized by higher density or population areas to receive access to their products or services.

Free Markets Can Be Bad – An Example

The below story captured national attention:

By BIANCA SEIDMAN / CBS NEWS / September 21, 2015, 4:35 PM

Drug price increases 5,000 percent overnight

A dramatic increase in the price of a decades-old drug called Daraprim has sparked protest among infectious disease doctors and advocates. The rights were purchased…by a new company, Turing Pharmaceuticals, which promptly increased the price from $13.50 per tablet to $750 per tablet -- a 5,000 percent jump -- the New York Times reported. Daraprim, the common name for the drug pyrimethamine, is the only medication for treating toxoplasmosis, an infection contracted from cat parasites that can cause birth defects. It is also used as a co-treatment for HIV infections, some cancers and malaria.

Externalities

Lead poisoning occurs when lead builds up in the body, often over a period of months or years. Exposure to even low levels of lead can cause damage over time. Children under the age of 6 are especially vulnerable to lead poisoning, which can severely affect mental and physical development. Higher levels can damage the kidneys and nervous system in both children and adults. Very high lead levels can be fatal.

Externalities are activities generating beneficial or detrimental to those not directly involved or in control of the activity. For example, in the case of Flint, Michigan, poor decisions designed to reduce costs associated with providing this publicly available water facilitated or caused contamination of the water supply and exposed more than 100,000 residents to high levels of lead in drinking water.

Pollution may also be caused by publicly traded corporations, when failing to exercise reasonable care and/or shifting costs to the public through negligence or carelessness or blatant disregard for the interests of the consuming public. These behaviors must be dissuaded or controlled through regulation and economic penalties and consequences to prevent environmental damage.

Cases like the Exxon Valdez oil spill (1989) or the more recent British Petroleum Deep-water Horizon oil spill (2010) are really not unlike the home mortgage crisis, in that the consuming public was harmed. They differ in that the home mortgage crisis was actually (unintentionally) caused by a

regulatory change in Glass-Seagull legislation, when it relaxed regulations that kept commercial and investment banking separate. Similarly, the Environmental Protection Agency (EPA) actually caused a spill of waste water in Colorado in 2015.

Highly publicized cases like the above create controversy, as the cases of Exxon and British Petroleum lead environmentalists, for example, to demand additional direct and indirect controls to prevent future incidents. Alternatively, the home mortgage crisis and the EPA waste water spill, as well as the Flint, Michigan water supply contamination case, lead opponents of additional regulation to point to the failures of these costly regulatory agencies and regulation to prevent behaviors that damage the consuming public and can even cause more problems than solved.

All of the above cases involved some level of incompetence and economics-based solutions can impose penalties to reduce harmful and intentional behaviors, but are not designed to prevent or reduce social costs incurred and those that cannot completely eliminate or prevent human error or incompetence or gross negligence.

Still, we attempt to modify behaviors by imposing direct controls, like exhaust emissions ceilings or pollution charges or emissions permits and the taxes or penalties on those exceeding acceptable standards that have been agreed to and are administered by regulatory agencies. In recent years, for example, carbon taxes have been imposed.

Summary

Monopolies can best serve the consuming public more efficiently and cost effectively, but only if regulated to prevent them from engaging in predatory practices that might be harmful to the consuming public. Economists examine these issues, usually on an industry-wide level, to assist elected officials in legislation and the creation of regulations that are balanced and/or result in an optimized decision. There have been occasions where deregulation has best served the consuming public, as technological changes warrant an ever-evolving and adjusting regulatory environment. And, of course, opinions vary on many of these decisions, where trade-offs exist between decisions favoring regulated monopolies versus pure competition, and everything in between.

Natural resources belong to the public and must be protected. Clean air and water, all would agree, are desirable. Of course, it is difficult to reach a consensus on the level at which fines and penalties should be imposed on those exceeding standards or even what the standards should be. Economists tend of focus on the trade-offs between alternatives faced when making these decisions and establishing these thresholds.

Chapter 12
Taxation

Learning Objectives

- Compare and contrast progressive, proportional, and regressive taxation.
- Distinguish between average tax rates and marginal tax rates.
- Describe examples of direct taxes and indirect taxes.
- Define the personal income tax, tax loophole, what is meant by tax exempt, tax deduction, and property taxes.
- Define and distinguish between payroll, corporate, and excise taxes.
- Describe the basics of the U.S. Social Security System.
- Explain which tax system is based on the ability-to-pay principle and how this relates to horizontal equity, vertical equity and the benefits principle of taxation.

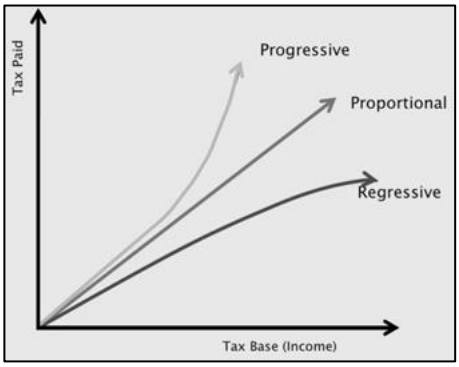
Taxation of fiscal policy is used to manipulate and modify behavior. Simply put, if you reward a behavior, you get more of it. If you punish a behavior, you get less of it. Individuals, households, corporations, and other taxable entities exploiting tax law by modifying their behavior to comply with public policy objectives to minimize their tax are said to be engaged in tax shifting. The general public would be more likely to refer to this as "tax planning." A few examples follow:

- The home mortgage interest deduction is designed to promote home ownership, presumed to be desirable, as home ownership suggests some level if increased stability relative to renting. Ceilings on deductible amounts, in recent years, retain this tax benefit for other than relatively wealthy taxpayers.
- The deductibility of charitable contributions is presumed to provide an economic incentive for those with more economic resources more than sufficient to meet their basic needs to participate in worthy causes and organizations serving the public and to some degree, filling a need that government would otherwise have to collect taxes to pay for and provide.
- Depreciable lives of long-lived assets are shortened or immediate expensing is permitted to encourage businesses to make capital improvements and purchase goods and services at an accelerated pace, where the goods and services they purchase stimulates demand for the same and further reduces unemployment and places upward pressures on wages at supplier or manufacturer firms.
- A "tax holiday" or a reduced tax rate is provided as an economic incentive for large, international corporations to repatriate cash and\or profits back to their U.S. origin, where they will pay some tax, increasing immediate, one-time tax and cash inflows into the U.S. Treasury, and provide inflows that might be put to use in the form of larger, taxable dividends to shareholders, stock buybacks to be anti-dilutive to existing or potential shareholders, and/or buy capital assets and hire labor for expansion of profitable activities.

Progressive, Proportional & Regressive Taxes

Historically, individual and corporate income taxes have been progressive, but government and goods and services designed to meet the needs of the public are also financed with proportional and regressive taxes.

- Progressive taxes increase the average tax rate (or bracket) as income rises (e.g., individual income tax rates).
- Proportional taxes maintain the same average tax rate at all income levels (e.g., payroll taxes like Social Security up to an inflation-indexed wage base ceiling).
- Regressive taxes decrease the average tax rate as income rises (e.g., sales taxes based on consumption).



In addition to the above, some additional terms are helpful to economists and the general public when examining social, fiscal and monetary policy issues:

- Average tax rate is the ratio of taxes to income.
- Marginal tax rate is the additional increment or component of tax on an additional dollar taxed.

Finally, some taxes are direct or apparently observable and some taxes and indirect or not immediately apparent:

- Direct taxes are those levied directly on individuals (e.g., the income tax).
- Indirect taxes are those levied on economic activities (e.g., the tax on gasoline and included in the price of a gallon of gasoline).

Federal Income Taxes

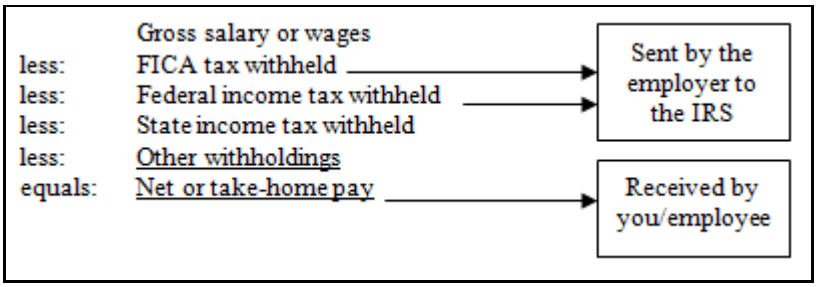
The most apparent Federal tax is the progressive individual or personal income tax, which, in its current form, began in 1913. Frequently, the popular press makes reference to tax loopholes, where a tax attorney might operationally define this as a legislative error or flaw or mistake, but this term is used by the general public to describe a tax preference or preferential treatment for a class of taxpayers or a classification of economic behavior (e.g., a lower tax rate on what was referred to as "carried interest" in the 2017 Trump\Clinton Presidential election).

Taxes and tax law has been designed to encourage some behaviors and discourage others. For example, some income is tax exempt (e.g., municipal bond interest). This tax exemption provides high income individuals with an economic incentive to finance capital projects designed to benefit the general public and makes it possible for these projects to be financed at a lower interest rate or economic cost to the public. Another example is the home mortgage interest tax deduction, designed to encourage home ownership in the US. However, it should be noted that Canada does not provide for a comparable tax deduction and enjoys similar levels of home ownership.

Payroll Taxes

Payroll taxes, at the Federal level, finance Social Security at matching levels of 7.65% for both employer and employee and includes for both retirement and hospitalization and disability insurance. The retirement component is subject to what is referred to as a wage base ceiling, which is indexed for inflation. As of early 2018, there was some anticipation or expectation of "wage" inflation.

Social Security is a social insurance program, including [1] old age and survivors insurance (OASI), [2] disability insurance (DI), and [3] health insurance (HI). From an employee's perspective, the combined 6.2% OASDI and 1.45% HI, total 7.65% to be contributed by both employer and employee, as follows:



A History of increases in FICA (Federal Insurance Contributions Act) and SECA (Self-Employment Contributions Act) tax rates follow:

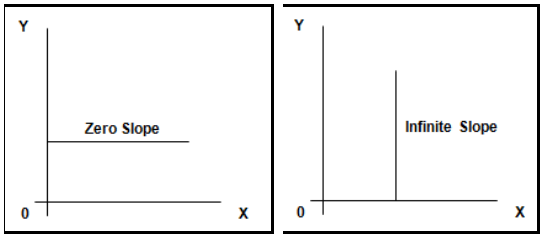
Tax Year(s)	Pre-Tax FICA	Pre-Tax SECA	SECA Tax - Net of Marginal FIT Rate 15%	28%	31%	33%	36%	39.6%
FICA Tax (1937-):								
1937-49	1.0%	NA						
1950	1.5%	NA						
SECA Tax (1951-):								
1951-53	1.50%	2.25%						
1954-56	2.00%	3.00%						
1957-58	2.25%	3.38%						
1959	2.50%	3.75%						
1960-61	3.00%	4.50%						
1962	3.13%	4.70%						
1963-65	3.63%	5.40%						
1966	4.20%	6.15%						
1967-68	4.40%	6.40%	N/A					
1969-70	4.80%	6.90%						
1971-72	5.20%	7.50%						
1973	5.85%	8.00%						
1974-77	5.85%	7.90%						
1978	6.05%	8.10%						
1979-80	6.13%	8.10%						
1981	6.65%	9.30%						
1982-83	6.70%	9.35%						
1984	6.70%	11.30%						
1985	7.05%	11.80%						
1986-87	7.15%	12.30%						
1988-89	7.51%	13.02%						
SECA Tax Subsidy Phase-Out Completed & SECA Taxes Adjusted & Partially Deductible (1990-):								
1990	7.65%	15.30%	13.1%	12.2%	NA	11.8%	NA	NA
1991-92	7.65%	15.30%	13.1%	12.2%	11.9%	NA	NA	NA
1993-	7.65%	15.30%	13.1%	12.2%	11.9%	NA	11.6%	11.3%

As the above table suggests, these payroll tax rates have been increased from 1.0% in 1937 to 7.65% since 1993, where the self-employed paid both employer and employee components, for a combined tax rate of 15.3% (7.65% plus 7.65%) through 2017. Wage bases or salaries to which these tax rates apply have been increased, over the years, based on “wage-based” measures of inflation.

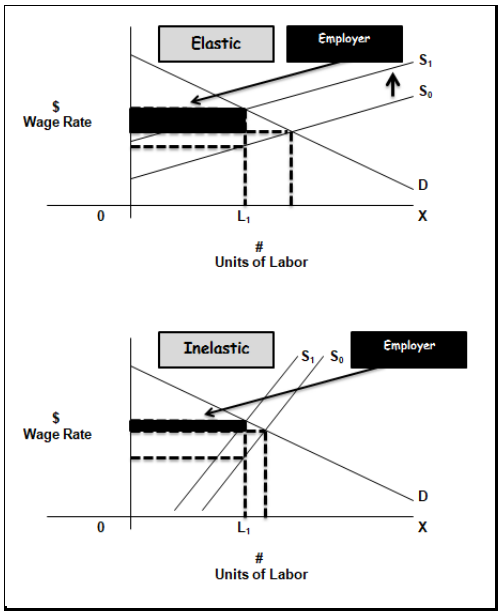
Payroll Taxes & Labor Supply Elasticity

Recall zero and infinite slopes, as follows:

- The graphic to the left (below) has a zero slope. The value of Y does not change, regardless of the value of X.
- The graphic to the right (below) has an infinite slope. The value of X does not change, regardless of the value of Y.



The graphic (below) represents payroll taxes at both [1] elastic (responsive and approaching a zero slope) and [2] inelastic (unresponsive and approaching an infinite slope) labor supply levels. The shaded black area represents the "employer" and the blank or white area represents the "employee' portion or component of payroll taxes. Note that in cases of inelastic labor supply, the burden of the payroll tax, increasingly, falls on the employee.

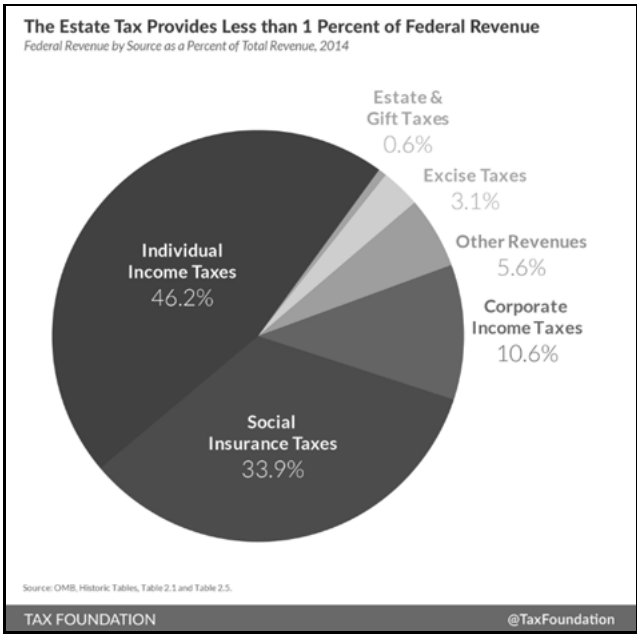


Corporate, Excise, Gift & Estate Taxes

The corporate income tax is levied on what the Internal Revenue Service refers to as subchapter C corporations. These tax rates were lowered through a tax law change passed by the Trump Administration in late 2017.

An excise tax is one levied on alcohol, cigarettes, gasoline and other items consumed by the public. In the case of alcohol and cigarettes or tobacco, these are sometimes referred to as "sin" taxes, as their consumption is presumed to be less than desirable and the excise tax increases the cost, and, perhaps, reduces their consumption.

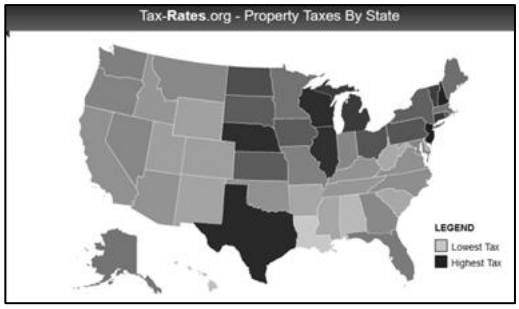
Gift taxes and estate taxes are imposed to increase the perception of fairness and equity, and to discourage sloth. Generally, the inheritance of wealth is taxed to reduce the perception of unfairness due entirely to an accident of birth.



These taxes result in a very small portion of total taxes collected at a relatively high administrative cost. Those subject to gift and estate taxes hire tax attorneys and accountants to reduce or minimize these taxes through tax planning or tax shifting. In this case, some would argue that the collection of these taxes is not cost effective and represents an excess burden or a deadweight loss.

State & Local Taxes

Property and sales taxes are the most apparent forms of taxation used to finance basic goods and services provided by state and local government. When combined with state individual and corporate income taxes, they support local police, fire, and education, where [1] property taxes are perceived as **progressive**, in that these taxes are imposed on those holding property; and [2] sales taxes are perceived as



regressive, in that these are consumption-based taxes and the poor may be forced to consume 100% of their income and pay this tax on 100% of their income, while the wealthy consume less than 100% of their income, are able to invest more than 0% of their income, and can, therefore, completely or partially escape this tax.

Taxation & Issues of Equity

The ability-to-pay principle suggests that those with more economic resources should pay higher taxes. Most would agree with this principle, but disagree on the level or magnitude. There is, also, a benefits-received-principle, suggesting that taxpayers should contribute in proportion to the benefits they receive form public expenditures.

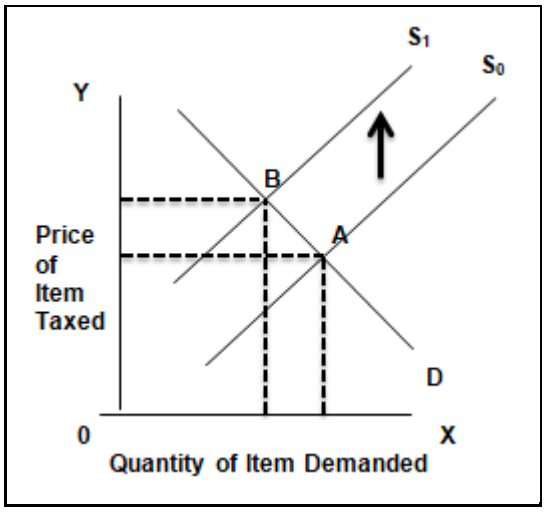
In recent years, the "top 1%" has been examined as a group disproportionately benefitting from fiscal and monetary policy in recent decades, and has incited some level of "class warfare" as politicians seek to exploit the failure of prior policies to achieve horizontal equity, vertical equity, and expand of the middle-class.

Horizontal equity seeks to achieve equity and "fairness," in that the objective is to tax those with equal economic resources equally. Vertical equity seeks to achieve equity and fairness and is based on the notion that different levels of taxation are warranted and should be founded on societal notions of fairness, where many disagree on the specifics or application or operational definition of "fair" in the context of public policy development and implementation.

The failure to achieve equity and disagreement on what is "fair" is likely to continue to encourage ongoing debate, as some feel that others benefit from tax loopholes, or that the burden of tax is excessive on one group and others fail to pay their "fair share" and benefit, disproportionately, under the existing system of taxation. Most economists agree that a comprehensive personal income tax or a consumption tax with few loopholes would maximize efficiency; however, it would be naive to fail to understand that economists are biased and build entire careers based on their alignment with a particular political party.

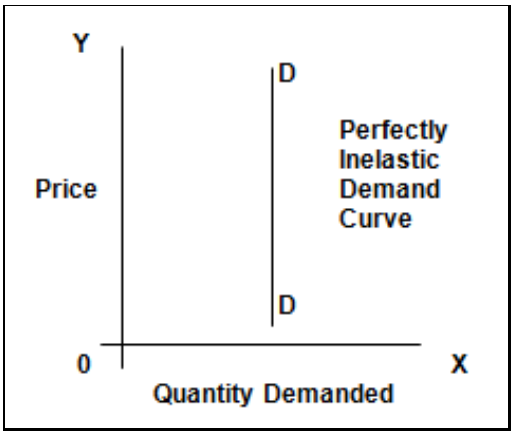
Efficiency in Taxation

Excise taxes are frequently imposed on luxury items, increasing the price of the item for a group of taxpayers expected to be able to pay the higher tax. Below is a graphic representing the increase in the price of the item purchased or consumed as the price increases from point A to point B when an excise tax is imposed.

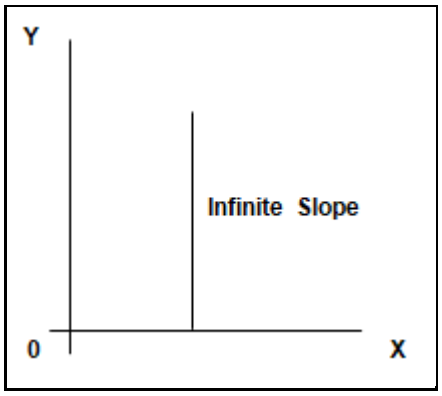


Generally, excise tax burdens are presumed to be shared between buyers and sellers, depending on the slope of the demand curve.

Recall that the **perfectly inelastic** demand curve is a <u>vertical</u> demand curve:

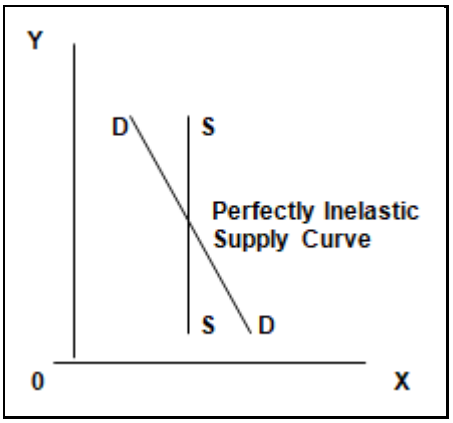


This is the case of an infinite slope, where infinite slope equals perfectly inelastic:



The case of perfect inelasticity of demand is one where the quantity demanded remains constant regardless of the price, so the imposition of an excise tax or an increase in an excise tax will have no impact on the quantity demanded. A case that was used and still a good example might be the cost of medical care in the case of a life-threatening condition such as a heart attack or late stage cancer.

The case of perfect inelasticity of supply is one where the quantity supplied remains constant regardless of the price, so the imposition of an excise tax or an increase in an excise tax will have no impact on the quantity supplied.



↑ Inelastic Demand suggests that consumers will pay a larger share of tax
↑ Inelastic Supply suggests that suppliers will pay a larger share of tax

Tax Neutrality & Tax-Based Distortions

The principle of tax neutrality suggests that decisions based solely on tax consequences represent distortions. This notion is "at odds" with tax incentives specifically designed to encourage certain behaviors. A tax that is not neutral is said to impose "excess burdens."

For example, the imposition of a tax on capital is known to distort choices with respect to technology. In the U.S., we tax capital gains, producing what is referred to as a "lock in" effect. Capital gains taxes, therefore, while perceived to be equitable by those not in the possession of significant amounts of capital, actually inhibits the free flow of economic resources to their highest and best use.

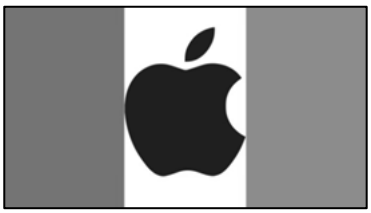
Economic Incentives & the Deduction for Personal Residence Interest Expense

Generally, is you reward a behavior, you get more of it; if you punish a behavior, you get less of it. It is, therefore, surprising that U.S. home ownership approximated 65% and Canadian home ownership was higher and closer to 68%

in 2013, despite the fact that the personal residence or home mortgage interest deduction has, historically, been available in the U.S., but has not been deductible in Canada. You would expect, given this historical subsidy provided by the U.S. and not Canada to, ceteris paribus, see higher home ownership levels in the U.S. when compared to Canada.

Public Law No. 115-97 referred to as the Tax Cuts and Jobs Act of 2017 (TCJA) will reduce the number of taxpayers benefitting from the personal residence or home mortgage interest expense deduction, as it [1] doubles the standard deduction, reducing the number of taxpayers benefitting from and itemizing this deduction and [2] lowers the ceiling on acquisition or home equity indebtedness, post-2017. Effectively, the U.S. is moving in the direction held under Canadian tax law, at least with respect to the home mortgage interest deduction.

Economic Incentives & the Corporate Repatriation of Tax and Cash



Public Law No. 115-97 referred to as the Tax Cuts and Jobs Act of 2017 (TCJA) reduces the corporate tax rate from 35% to 21% and provides for a one-time repatriation of tax on profits in overseas subsidiaries of 8%, 15.5% for cash. This tax law change was expected to result in inflows of cash from offshore tax haven countries, where totals have been approximated at $3 trillion. In fact, in a news release dated January 17, 2018, it was disclosed that Apple (NASDAQ: AAPL) expected to incur $38 billion in additional U.S. corporate income taxes from the transfer of $252 billion held outside the U.S., where most of this cash is held in Irish subsidiaries.

Summary

The U.S. system of income taxation is progressive and based on the ability-to-pay principle. While no one enjoys paying taxes, tax receipts and revenues are used to fund essential services, including defense. Social Security and Medicare taxes are used to provide a basic, minimal level of retirement benefits, disability, and health insurance, based on contributions and economics need.

Chapter 13
Securities & the Stock Market

Learning Objectives

- Define stocks and bonds in the context of financing assets for a corporation.
- Explain how the price of stocks and bonds are related.
- Explain how inflation or an anticipated inflation rate relates to a total or nominal rate of interest charged by a lender to a borrower.
- Define derivative.

After the November 2016 Presidential Election, what some would come to refer to as the "Trump Rally" resulted in more than $8 trillion dollars in additional wealth, as measured by the stock market, through January 2018. These measures may or may not be sustainable, and economists vary with respect to their opinions on these matters.

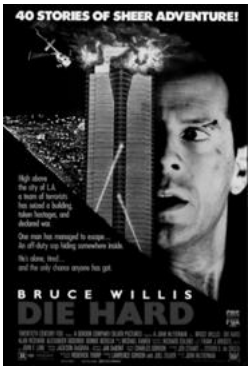
Corporations

Corporate stocks and corporate bonds are equity and debt securities traded on exchanges like the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX), and the National Association of Securities Dealers Automated Quotation (NASDAQ) system. The largest corporations are publicly traded on these exchanges.

A corporation is a separate legal entity with an unlimited life and owned by shareholders. Shareholders elect a board of directors, the board of directors hires executives, and the executives hire managers, and so on. For some famous scenes involving shareholder meetings, see **Wall Street** (1987), a dramatic film, and **Other People's Money** (1991), a comedic film. Both films represent an entertaining way to learn about corporate takeovers in context.

Shareholders have losses limited to their investment in corporate stock, known as limited liability. Subchapter C corporations are taxed.

Beginning with the 2018 tax year, new legislation reduced progressive corporate Federal tax rates from a high of 35% (38%, if "the bubble" was included), to an average tax rate of 21%. However, the dividends paid to shareholders from these corporations continue to be taxed as dividends and at the individual level (i.e., a system of double taxation applies).



Corporate activities are finance with stocks and bonds, where stock represents partial ownership and voting rights based on the number of shares owned and bonds represent debt and the right to receive interest. A shareholder who owns 1 share of a stock in a corporation with 100 shares issued and outstanding owns 1% of the corporation. A bond holder owns a debt instrument that pays a stated rate of interest until the bond is retired.

There are a large variety of stocks and bonds with varying rights. For example, there are common and preferred stocks, where the latter receive a preference, usually in the event of bankruptcy and liquidation. There are, also, a broad variety of bonds, including those paying interest to the registered owner and those paid to the bearer. For some interesting crime-thriller action films involving the theft of **bearer** bonds, see **Die Hard** (1988) and\or **Heat** (2013).

In broad and general terms, one can invest in debt or equity. As interest rates increase, therefore, some investors, at the margin, will choose to exit the stock market and invest in interest-bearing debt instruments. The opposite is also true. As interest rates decline, and investor seeking to maximize returns might choose to sell his or her interest- bearing debt instruments and invest in equity securities and the stock market.

In fact, the above pattern is so well known, that it sometimes represented by the phrase, **DON'T FIGHT THE FED**.

The Fed is the Federal Reserve and the point is that when the Federal Reserve raises the interest rates it pays on the National debt, the stock market should decline and visa\versa. Of course, this is in the context of ceteris paribus, as are all things examined in economics.

Furthermore, when market-based interest rates increase from 4% to 5%, a bond, corporate or otherwise, issued to pay 4% per year over 30 years, is less valuable, as it continues to pay the contracted or stated rate of 4% in a market, now, commanding 5%. So, when interest rates rise, the price of previously issued bonds must fall; when interest rates fall, the price of previously issued bonds must rise.

Interest (I) rate increase = Price of bonds (B) decrease or $I\uparrow = P_B\downarrow$
Interest (I) rate decrease = Price of bonds (B) increase or $I\downarrow = P_B\uparrow$

Interest (I) rate increase = Price of stocks (S) decrease or $I\uparrow = P_S\downarrow$
Interest (I) rate decrease = Price of stocks (S) increase or $I\downarrow = P_S\uparrow$

From the corporate perspective, issuing bonds is riskier than issuing stock, since bonds require fixed payments of interest or rents on money. From the investor perspective, owning stock is riskier than owning bonds, since a corporate stock can increase or decrease in value and dividends may be paid or not paid, based on decisions made by the board of directors.

In the event of bankruptcy or a corporate failure, bondholders are paid, in full, before any recovery becomes available to stockholders. Corporations must decide whether to pay dividends to shareholders or "retain earnings" for reinvestment or expansion of corporate activities.

Investing v. Speculating & Debt v. Equity

Whether you are an investor or a speculator can be a function of your position on what economists refer to as the age-earnings life cycle. If you are in your 20s, risk-taking may appeal to you, as you have a lifetime to recover from any losses. If you are in your 60s, you are likely to engage in less risky behaviors or investments, as you are approaching retirement age and do not have time to recover significant losses.

In general, conservative investors buy-and-hold debt or equity securities, long-term, and speculators, at the extreme, might be referred to and engage in day-trading. In fact, Wall Street brokers and dealers "rotate" or "rebalance" their portfolio into or out of a particular sector of the economy, but with less frequency than a retail investor or a retail day-trader.

Derivative securities like call options or put options are "derived" from the underlying stock or security, where the most famous, recent derivatives are the credit default swaps (CDS) associated with the housing or mortgage crisis. In this case, a specific component of risk – the risk of default on home mortgages – was isolated and traded as a separate security or "securitized."

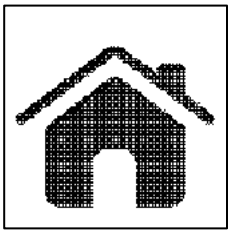
In broad and general terms, returns or rates of return can be broken down into components, as follows:

	Home Mortgage (Secured)	Credit Card (Unsecured)
Profit Rate	**2%**	**2%**
Anticipated Inflation Rate	**2%**	**2%**
Risk Rate	**0%**	**14%**
Total Rate	**4%**	**18%**

While the above represents an oversimplification, it does provide for a basic framework for basic understanding of the nominal rate of interest charged by a lender for economic rents for their money. Basically, you can foreclose on a home that has been mortgaged, but you cannot repossess the Hawaiian vacation that a consumer put on their unsecured credit card. Therefore, there is a higher level or risk or a significant risk rate component associated with the rate of interest charged to the consumer for this unsecured debt.

Similarly, bonds are perceived by the market as less risky when compared to stocks. Bonds are, frequently, secured by an underlying asset. Stocks can go up or down. In the event of bankruptcy, the bond holder is paid from liquidating proceeds before any money is paid to a common shareholder.

The Housing Crisis

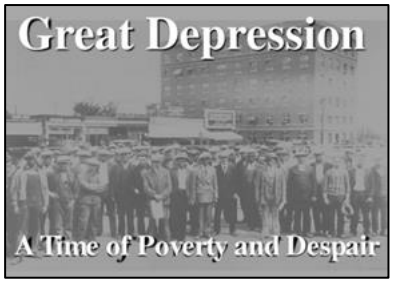


In the years leading up to the housing crisis and what some refer to as the "great recession," many consumers were mortgaging their homes and consuming the equity. Others were speculating and buying into the ever-rising values represented by the housing sector of the economy. Loans on homes were being made without documentation and were referred to as "no doc loans," where there was no verification of income levels or the buyer's ability to pay the monthly payment. In some cases, 100% of the purchase price was financed, maximizing the financial leverage used to buy into the sector.

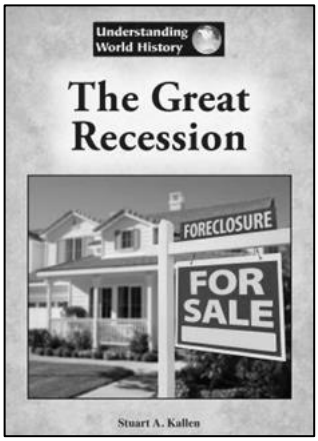
One of the components of risk associated with a mortgage or any debt is default risk. This component of risk was securitized and traded on securities exchanges. Derived from the mortgage, as less than creditworthy loans comprised ever-increasing components of mortgages packaged and securitized, and defaults began to increase, these defaults or credit default swaps (CDSs) began to trigger repayment obligations, and the housing sector "crashed."

The Securities and Exchange Commission & Regulation

The Securities and Exchange Commission regulates securities markets. It was formed after the stock market crash of 1929. They did not; however, create conditions necessary for the housing crisis (2007-2009), which was facilitated when Glass-Steagall Act of 1932 restrictions were relaxed by elected officials in 1999, and the Gramm-Leach-Bliley Act was signed into law by President Bill Clinton.



It is interesting to note that the stock market crash (1929), leading to the Great Depression of the 1930s, was caused, in part, by speculation and risk-taking or excessive use of trading securities on margin or the excessive use of financial leverage or borrowing, only to be avoided for decades by legislating through Glass-Steagall (1932) and the creation of the Securities and Exchange Commission (1933 & 1934). When the Glass-Steagall Act of 1932 was modified in 1999, it encouraged speculation and the use of financial leverage, was followed by a housing crisis in 2007-2009 or another market crash, and, finally, what some refer to as the Great Recession in its aftermath.



Summary

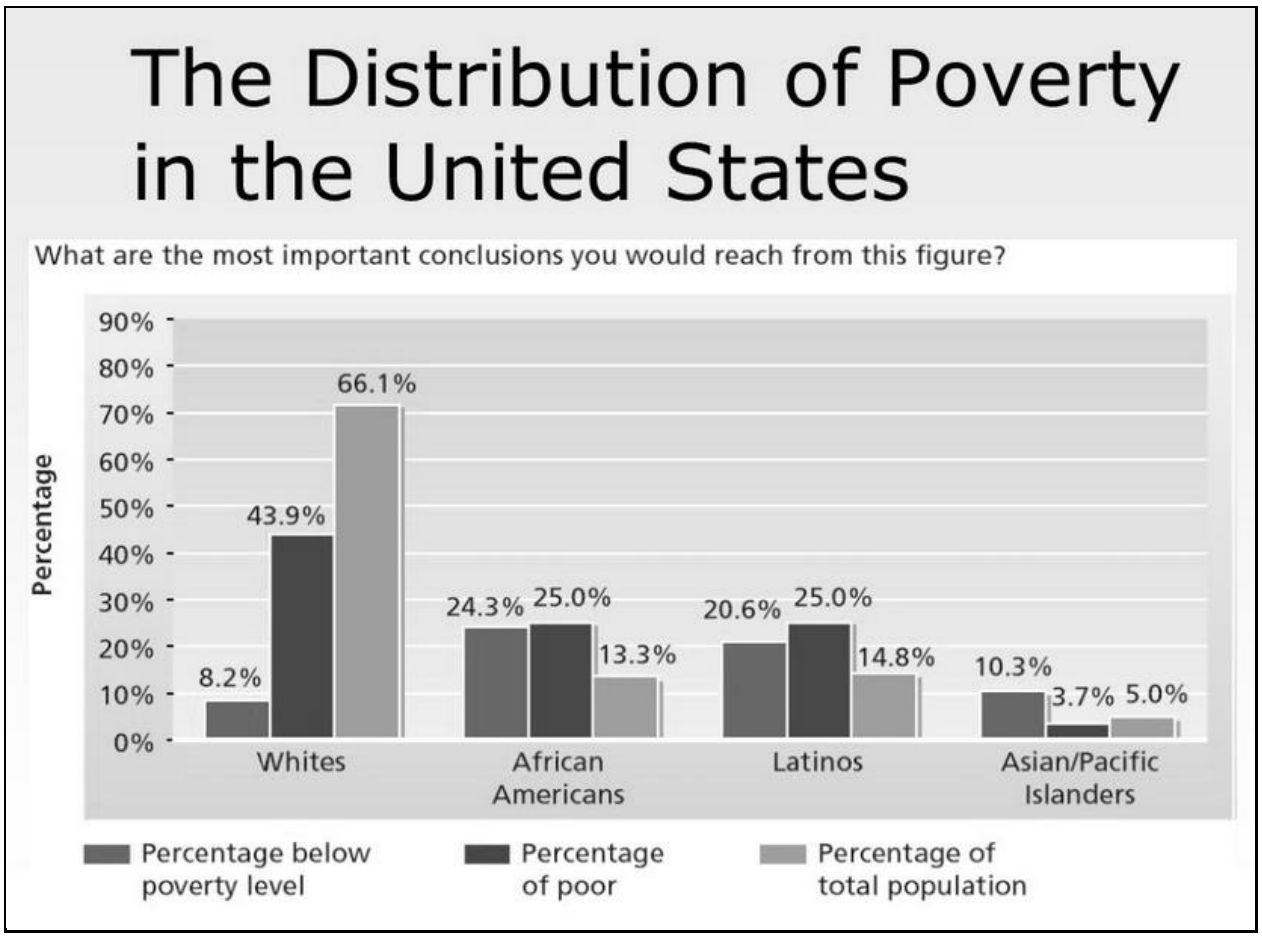
The Securities and Exchange Commission is charged with the responsibility of administrating laws and regulations passed by the executive and legislative branches of our Government. They do not decide the law, but enforce it, particularly in the cases of publicly traded corporations on the NYSE, AMEX, and NASDAQ.

Chapter 14
Poverty, Inequality & Discrimination

Learning Objectives

- Describe the poverty line in the context of absolute poverty and relative poverty.
- List the reasons for inequality with respect to income.
- Explain and distinguish between economic discrimination and alternative reasons and justification for discrimination.
- Define the negative income tax and how it relates to the earned income tax credit.
- Describe the Lorenz Curve and the Gini Coefficient.

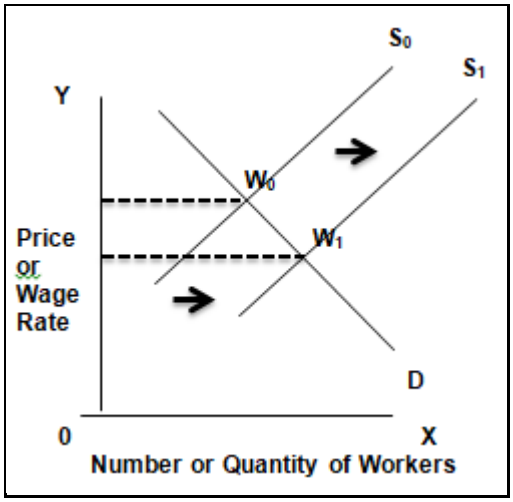
The poverty line represents an income level below which an individual or family is presumed to be "poor." Poverty can be operationally defined in [1] absolute or [2] relative terms, where [1] absolute poverty (optimistic view) is defined as a level below which a certain minimum standard of living is not attainable and [2] relative poverty (pessimistic view) is a level presumed to be too far below the average income.



Determinants of Inequality

Inequality can result from [1] differences in ability or skills, [2] differences in work ethic, [3] results from risk taking, [4] wage differential for self-selected professions, [5] education and training, [6] work experience, [7] inheritance, and\or [8] luck.

Economic discrimination occurs when equivalent factors of production (resources) receive different compensation for equal contributions. Discrimination can play a significant and foundational role as a determinant of inequality and contributes to inefficiency.



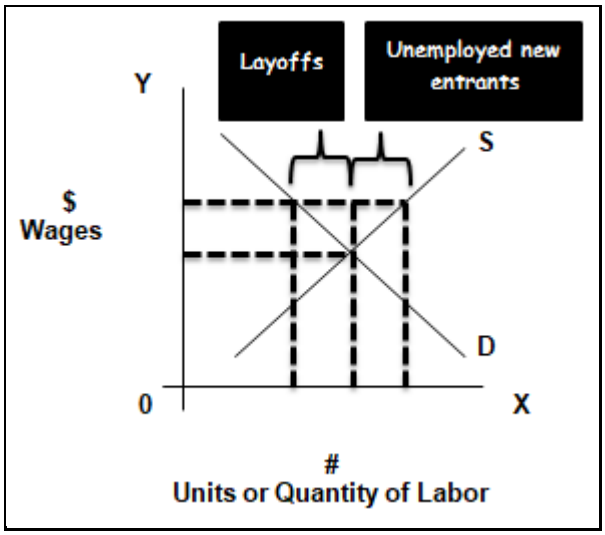
W_0 and S_0 represent the number or quantity of workers available under conditions of discrimination. W_1 and S_1 represent the number or quantity of workers available under conditions of no discrimination, where the firm has a larger supply of qualified applicants and a cost advantage.

Trade-off between Equality & Efficiency

In broad and general terms, actions taken to achieve economic equality reduce economic efficiency. Therefore, policies designed to improve conditions of equality should generate the lowest possible level of interference with economic incentives and efficiency and society must make a decision with respect to the price it is willing to pay to achieve the desired level of equality.

It should be understood that human capital is comprised of inborn and/or acquired knowledge, skills, and talents, and this stock varies for individuals. For this reason, there are differences in wages. Similarly, risky jobs may pay higher wages and preferred jobs may pay lower wages. However, the Federal Government and states may establish minimum wages, representing the lowest wage that a firm is permitted to pay a worker or a price floor for the price of labor.

As the following graphic illustrates, increases in minimum wage increase the supply of labor, but, if the equilibrium market wage for unskilled labor is below the legislated minimum wage, unemployment is likely to result.

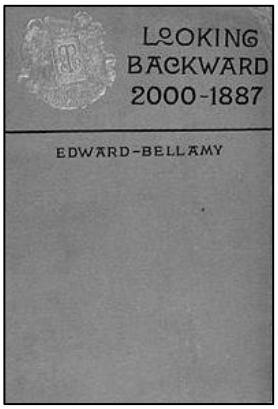


Policies to Reduce Poverty, Inequality & Discrimination

The vicious-circle-of-poverty hypothesis suggests that poverty self-perpetuates, as poor individuals and poor nations must consume all resources and are not able to save and invest enough to accumulate the capital that would make it possible for them to grow and reduce the scarcity of goods and services providing for their basic needs.

Transfer payments to those unable or unwilling to provide goods or services include public assistance in the form of welfare and food stamps. These tend to represent economic stabilizers, and, in slang terms, represent a "safety net" for those experiencing difficult economic and living conditions.

Education is, perhaps, the best solution to poverty, but welfare in the form of food stamps, rent subsidies, cash assistance and other forms of transfers in kind, and a negative income tax, "workfare" or the earned income tax credit all represent policy efforts to combat poverty.

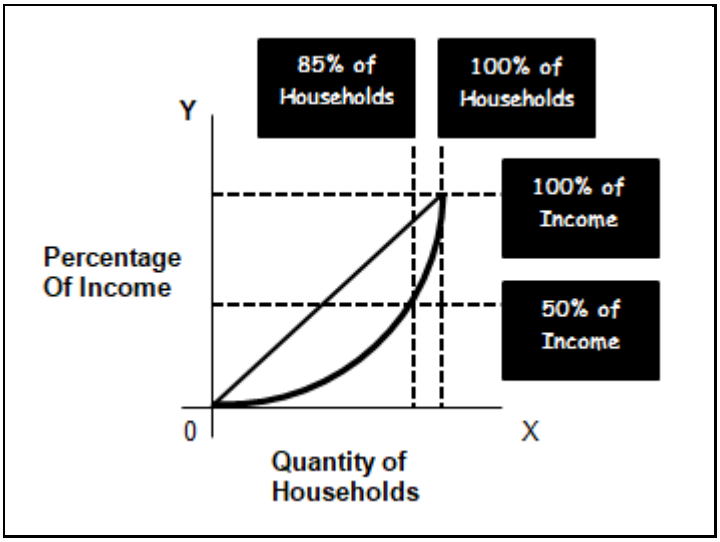


For those interested in the "progressive" perspective and an illustration of a socialistic utopian system designed to resolve poverty, the book, **Looking Backward from the Year 2000** by Edward Bellamy, is often credited with the foundation of the progressive movement. A more contemporary author, Mack Reynolds, wrote a series of science fiction novels based on this notion.

While the democrats often refer to themselves as progressives, the utopian system and fact pattern described and captured in this novel is not paralleled by the policies pursued by the Democrat party and has never existed in this pure form. This utopian system, and others, appears to rely on the absence of greed, and, so, is inconsistent with human behavior. Capitalism is consistent with greed, but requires regulation.

The Lorenz Curve & the Gini Coefficient

The Lorenz Curve is a widely used graph of the distribution of income. The cumulative percentage of households is plotted along the horizontal or x-axis and the cumulative percentage of income is plotted along the vertical or y-axis, as follows:



In the above example, the bottom 85% of households earned only 50% of total money income. The Gini coefficient is derived from the Lorenz Curve, and ranges from 0 through 1. It represents the degree of inequality. If income is equally distributed, the Gini coefficient is zero. As it approaches 1, greater inequality exists.

Summary

It is desirable and preferable to eliminate or minimize poverty, inequality, and discrimination. From an economic perspective and in a capitalistic open market economy, a growing middle-class is desirable. However, while all will agree that these pursuits are desirable, there is often disagreement on how to achieve optimal levels, as these desirable pursuits are not without cost. Certainly, discrimination is both undesirable and economically inefficient, but the level and cost associated with poverty reduction is unknown and will remain an area of controversy.

Chapter 15
International Trade & Comparative Advantage

Learning Objectives

- Compare and contrast absolute advantage and comparative advantage.
- Define protectionism and mercantilism.
- Describe tariffs, quotas, export subsidies, and dumping as they relate to international trade.
- Explain the infant industry and strategic arguments for protectionism.
- Describe industrial policy, import substitution, and export promotion.
- List 2 international agencies established to assist developing countries with financing and international currency exchange.

International trade represented a significant issue during the 2016 U.S. Presidential election, where Donald Trump campaigned on a relatively nationalistic agenda, involving the possible repeal of the North American Free Trade Agreement (NAFTA; 1994), the Asia-Pacific Trade Agreement (APTA), trade surpluses enjoyed by China, Mexico and Japan, and promoted an "America First" slogan first used by President Woodrow Wilson during the Presidential election of 1916. The Trump doctrine is somewhat merchantilistic, in that it appears, at first glance, to suggest that exporting is good and importing and trade deficits are bad – a position that may be interfere with free trade.

International Trade, Comparative Advantage, and Protectionism

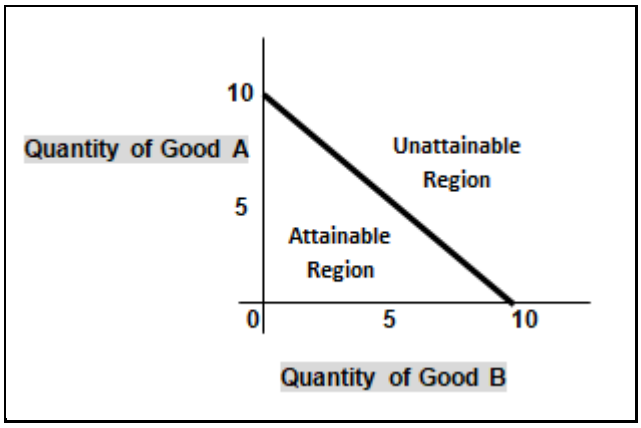
A country has absolute advantage when compared to another if and when it can consume fewer inputs to produce a desired unit of output. In the case of farming, for example, one country might enjoy a more favorable growing climate. Another might enjoy an abundance of desirable natural resources, like gold, silver, uranium, oil, and so on. Still another might have an abundance of low cost labor, a condition that has allowed quite a few "emerging markets" to enjoy higher employment levels and increasing standards of living, as the U.S. and other industrialized nations have "outsourced" manufacturing to these countries in recent decades.

A country has a comparative advantage when compared to another if and when it can produce goods or outputs at a lower cost *in terms of other* goods or outputs. Assume that country A, for example, has an absolute advantage over country B in both farming and mining, but the market demand is such that neither country can provide for one-hundred percent of the desired output for consumption. Given this fact pattern, country A will choose to shift production to the more profitable endeavor and this relative profitability level will be measured in terms of the opportunity cost. Stated alternatively, country A will shift production to farming or mining based on its ability to consume fewer inputs relative to the other country or competitors.

In broad and general terms, through trade, nations seek a profit- or standard of living-maximizing mixture of mutual gains through voluntary exchanges. These exchanges involve and include consideration of domestic political issues, the many currencies involved in these exchanges, and barriers or impediments to mobility for labor and capital. When each nation does what it does best, all nations benefit, and without increasing the inefficient consumption of material, labor, and overall resources used.

Comparative Advantage & Absolute Advantage

Recall the production possibilities frontier, where the below provide [1] linear and [2] curvilinear illustrations and [3] a level of inefficient production that does not maximize productive capacity due to insufficient domestic demand for a product or service that could be produced and exported to a nation incapable of producing that good or service as efficiently.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Quantity of Good A
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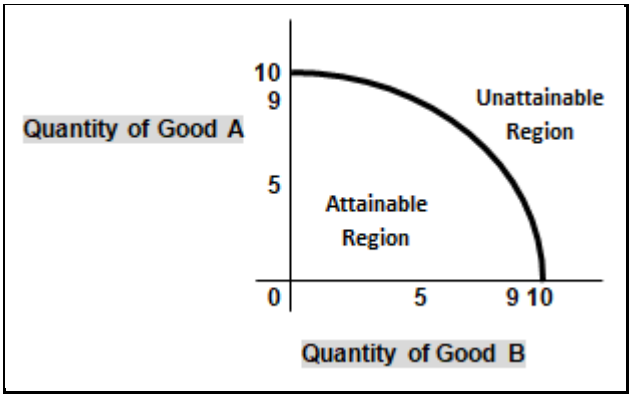
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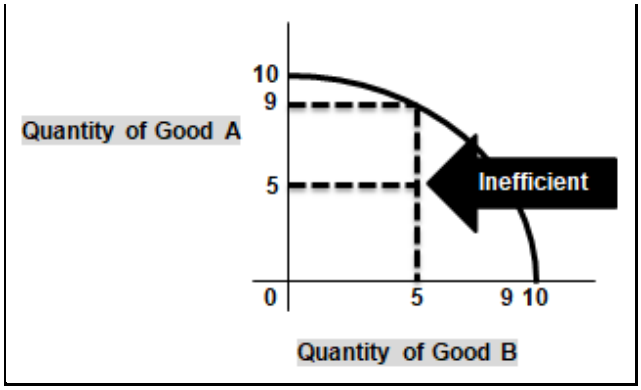
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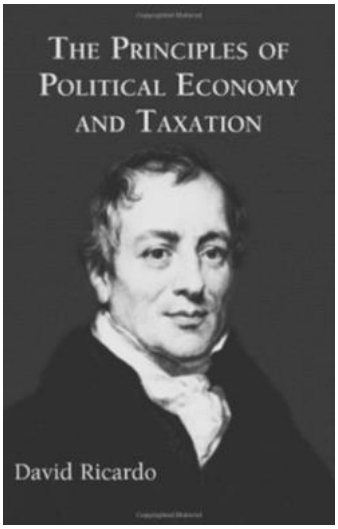


David Ricardo is best known for his work in his ***Principles of Political Economy and Taxation*** (1817). He advanced a labor theory of value.

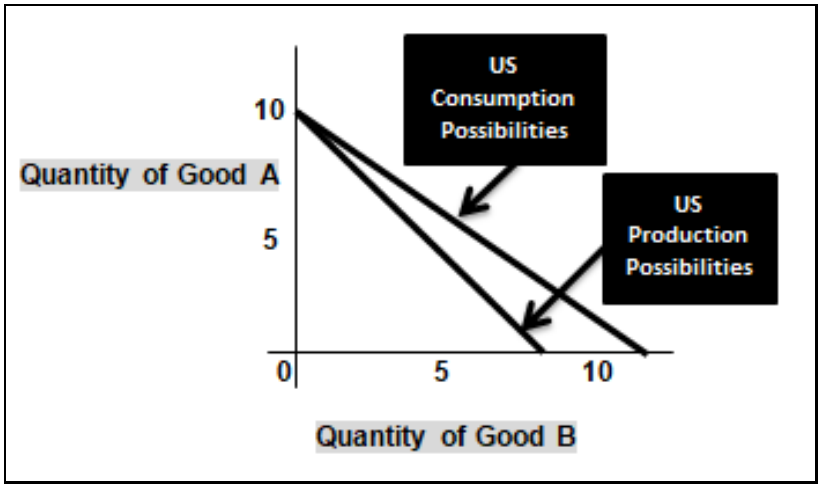
The value of a commodity, or the quantity of any other commodity for which it will exchange, he explained, depends on the relative quantity of labor which is necessary for its production, and not on the greater or less compensation which is paid for that labor. He theorized that specialization would benefit all trading partners, and real wages would rise for all, even those absolutely less efficient producers.

Terms of trade is operationally defined as the ratio at which a country can trade a domestic product for products they import. Comparative advantage lowers opportunity costs.

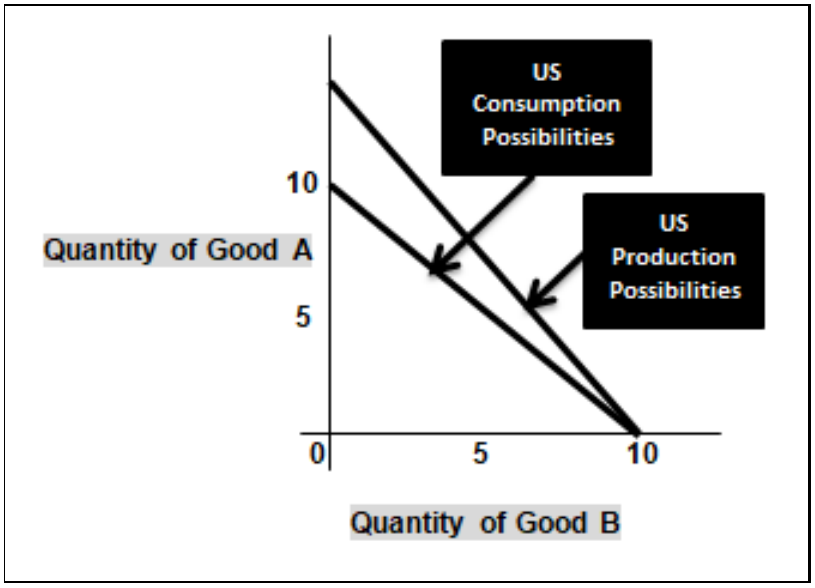
The quantity and quality of labor, land, and natural resources of a country is referred to as its factor endowments. The Heckscher-Ohlin theorem is a theory that explains a nation's comparative advantage in terms of its factor endowments, providing it with a comparative advantage and inputs used extensively for a product or service.

The following graphics illustrate an opportunity for gains through trade.

In the below case, U.S. consumption exceeds U.S. production, so the U.S. might benefit from imports to make up the shortfall in production.



In the below case, U.S. production exceeds U.S. consumption, so the U.S. might benefit from exports to generate a trade surplus for surplus production.



Of course, the above cases illustrate comparative and not absolute advantage. Part of the advantages enjoyed by emerging markets in recent years has been the absolute advantage with respect to labor. Some of these advantages have enjoyed publicity. For example, Nike took advantage of children in Third World countries, by western standards, and admitted to this in both 2001 and 2011.

Published on Saturday, October 20, 2001 by the Independent/UK

'We Blew It': Nike Admits to Mistakes Over Child Labor

by Steve Boggan

Nike workers 'kicked, slapped and verbally abused' at factories making Converse

- **New allegations follow years of outrage over child labour and sweatshops**
- **Sports brand giant claims there is very they can do to stop it**

By DAILY MAIL REPORTER
UPDATED: 09:47 EST, 13 July 2011

This presents an interesting economic dilemma. It is the lack of labor laws in emerging markets that has created an absolute advantage with respect to labor in some of these Third World countries.

However; it is, also, the lack of labor laws that provide for low wages to those who might otherwise starve without the jobs that are less than desirable by western standards.

Therefore, if you prohibit Nike from hiring and eliminate the job and the children may starve. Clearly, they would not have accepted these positions had alternatives been available. One could, easily, argue that Nike is providing a relatively favorable alternative.

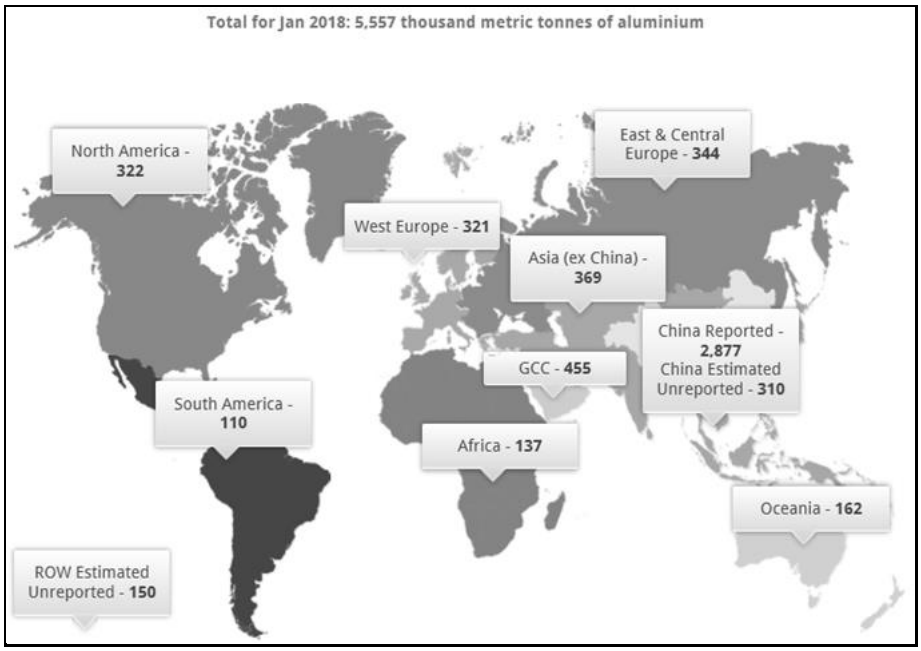
Tariffs, Quotas, Export Subsidies & Dumping

Tariffs can be designed to protect domestic infant industries, as can the imposition of quotas or ceilings on imports of a particular variety, and even export subsidies might be provided to industries that a nation believes requires some assistance on the international market. All of these mechanisms interfere with free or open markets, but may represent steps necessary to protect a nation's citizens from unfair or inequitable trade practices by competing nations.

For example, a competing nation may be dumping its exports on your nation through their own export subsidies designed to oversupply an item at below market prices or even below their own cost, both of which would constitute anti-trust violations and predatory business practices domestically and under U.S. law. However, a nation might engage in these actions to protect a young or infant industry and position itself as a viable competitor or even eventual international market share leader. A nation might retaliate with import tariffs. A reaction of this sort would be one of many and constitute the beginning of a trade war.

During the week ending March 2, 2018, the Trump Administration suggested that it was quite possible that a 25% tariff might be placed on steel imports and a 10% tariff on aluminum imports. These, in the words of the Administration, would be reciprocal taxes, where examples included China charging the U.S. a 25% tax and the U.S. charging China only 2.5% on certain manufactured goods. Below are some early 2018 measures on worldwide steel and aluminum production:

Where Does Worldwide Aluminum Come From? China produces about 9-10 times the steel produced by the U.S./North America:



Where Does Worldwide Steel Come From? China produces about 10 times the aluminum produced by the U.S.:

worldsteel
ASSOCIATION

Monthly crude steel production in the 64 countries included in the report, in thousands of tonnes.

	January 2018	January 2017	% change Jan-18/17	1 month 2018	1 month 2017	1 month % change
Austria	668	699	-5.8	668	699	-5.8
Belgium	630 e	636	-0.9	630	636	-0.9
Bulgaria	55 e	53	3.6	55	53	3.6
Croatia	0 e	0	-16.7	0	0	-16.7
Czech Republic	461	437	5.6	461	437	5.6
Finland	376	362	3.7	376	362	3.7
France	1 371	1 332	3.0	1 371	1 332	3.0
Germany	3 700 e	3 647	1.5	3 700	3 647	1.5
Greece	110 e	85	29.4	110	85	29.4
Hungary	155	132	17.4	155	132	17.4
Italy	2 018	1 917	5.3	2 018	1 917	5.3
Luxembourg	200 e	202	-1.0	200	202	-1.0
Netherlands	588	602	-2.4	588	602	-2.4
Poland	900 e	852	5.6	900	852	5.6
Slovakia	427	429	-0.5	427	429	-0.5
Slovenia	51	53	-3.7	51	53	-3.7
Spain	1 167	1 179	-1.0	1 167	1 179	-1.0
Sweden	444	428	3.8	444	428	3.8
United Kingdom	589	677	-13.0	589	677	-13.0
Other E.U. (28) (e)	490 e	469	4.4	490	469	4.4
European Union (28)	**14 391**	**14 191**	**1.4**	**14 391**	**14 191**	**1.4**
Bosnia-Herzegovina	73	44	65.3	73	44	65.3
Macedonia	35 e	0	..	35	0	..
Norway	54	58	-7.2	54	58	-7.2
Serbia	178	89	100.0	178	89	100.0
Turkey	3 174	2 950	7.6	3 174	2 950	7.6
Other Europe	**3 514**	**3 141**	**11.9**	**3 514**	**3 141**	**11.9**
Byelorussia	230 e	160	43.8	230	160	43.8
Kazakhstan	360 e	363	-3.6	360	363	-3.6
Moldova	50 e	0	..	50	0	..
Russia	5 700 e	5 933	-3.9	5 700	5 933	-3.9
Ukraine	2 100 e	2 103	-0.1	2 100	2 103	-0.1
Uzbekistan	60 e	51	17.6	60	51	17.6
C.I.S. (6)	**8 400**	**8 510**	**-1.4**	**8 400**	**8 510**	**-1.4**
Canada	1 140 e	1 140	0.0	1 140	1 140	0.0
Cuba	20 e	18	11.1	20	18	11.1
El Salvador	10 e	8	25.0	10	8	25.0
Guatemala	25 e	25	0.0	25	25	0.0
Mexico	1 620 e	1 678	-3.5	1 620	1 678	-3.5
United States	6 822	6 975	-2.2	6 822	6 975	-2.2
North America	**9 637**	**9 844**	**-2.1**	**9 637**	**9 844**	**-2.1**
Argentina	344	291	18.0	344	291	18.0
Brazil	2 866 e	2 828	1.3	2 866	2 828	1.3
Chile	100 e	99	1.2	100	99	1.2
Colombia	105 e	93	12.7	105	93	12.7
Ecuador	45 e	47	-4.3	45	47	-4.3
Paraguay	5 e	2	150.0	5	2	150.0
Peru	100 e	99	1.4	100	99	1.4
Uruguay	5 e	6	-16.7	5	6	-16.7
Venezuela	35	27	28.6	35	27	28.6
South America	**3 605**	**3 492**	**3.2**	**3 605**	**3 492**	**3.2**
Egypt	660	573	15.2	660	573	15.2
Libya	48 e	9	407.3	48	9	407.3
South Africa	577 e	534	8.1	577	534	8.1
Africa	**1 285**	**1 116**	**15.1**	**1 285**	**1 116**	**15.1**
Iran	1 980	1 573	25.9	1 980	1 573	25.9
Qatar	233	247	-5.7	233	247	-5.7
Saudi Arabia (1)	423	483	-12.3	423	483	-12.3
United Arab Emirates	282 e	318	-11.3	282	318	-11.3
Middle East	**2 918**	**2 620**	**11.4**	**2 918**	**2 620**	**11.4**
China	67 000	67 580	-0.9	67 000	67 580	-0.9
India	9 028 e	8 810	2.5	9 028	8 810	2.5
Japan	9 030 e	9 003	0.3	9 030	9 003	0.3
South Korea	6 125 e	5 963	2.7	6 125	5 963	2.7
Pakistan	425	380	11.8	425	380	11.8
Taiwan, China	1 960	1 888	3.8	1 960	1 888	3.8
Thailand	414	369	12.2	414	369	12.2
Vietnam (2)	1 065	767	38.8	1 065	767	38.8
Asia	**95 047**	**94 780**	**0.3**	**95 047**	**94 780**	**0.3**
Australia	493	437	12.9	493	437	12.9
New Zealand	59	58	1.7	59	58	1.7
Oceania	**552**	**495**	**11.6**	**552**	**495**	**11.6**
Total 64 countries (3)	**139 439**	**138 266**	**0.8**	**139 439**	**138 266**	**0.8**

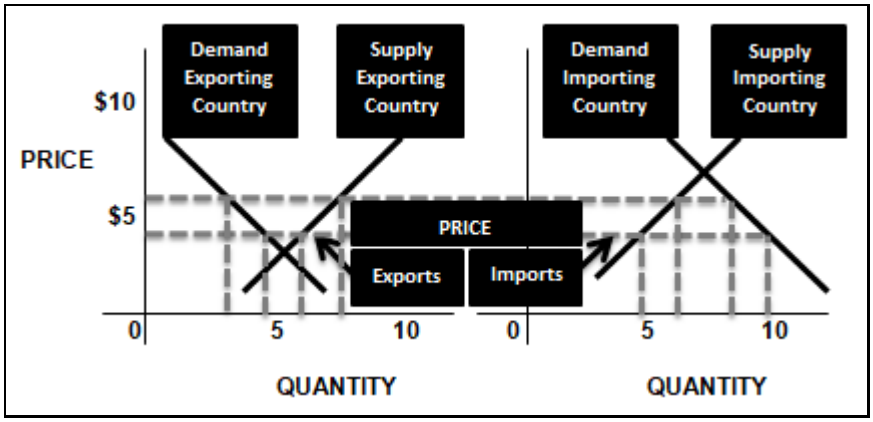
(1) - HADEED only.
(2) - partial data, approximately 75% of national total.
(3) - the 64 countries included in this table accounted for approximately 99% of total world crude steel production in 2017.
e - estimated

These early 2018 actions by the Trump Administration may or may not represent a new industrial policy, where steel and aluminum producers have been selected for further or renewed economic development. The Administration may choose to favor an import substitution approach, replacing imports with domestic production and/or combine this strategy with export promotion, a policy designed to encourage exports of these are other goods and services, including energy.

Supply-Demand Equilibrium for International Trade

The below graphic provides an illustration of a good or service, where the price for exports and the price for imports must be the same in order for trade to take place, and listed is the

[1] Demand curve for the exporting country,
[2] Supply curve for the exporting country,
[3] Demand curve for the importing country, and
[4] Supply curve for the importing country.



Any import restriction by way of a quota can be achieved with a tariff.

Economic Integration & Development

Economic integration occurs when two or more nations join to form a free-trade zone. The European Community (EC) started to form the largest free-trade zone in the world in 1991. The European Union (EU), as it is now called, had 27 members before the exit of Britain (BREXIT) in 2016.

Similarly, the U.S.-Canadian Free Trade Agreement eliminated barriers to trade between the U.S. and Canada, and the North American Free Trade Agreement (NAFTA) established all of North America as a free-trade zone. The latter involved Canada, the U.S., and Mexico.

There are some "tendencies" that have been observed and studied by economists, including capital flight - where human and financial capital leaves developing countries to achieve greater returns with lower risk in more fully-developed nations, and a brain drain – where the most talented from developing countries remain in a more developed nation after completing their education in the latter. These topics have been discussed in the popular press in recent decades.

The International Monetary Fund (IMF) was established to stabilize international exchange rates and lend money to countries that would otherwise be unable to finance their international transactions. Exchange rates are the ratio at which two currencies are traded or the price of one currency in terms of another currency. The World Bank lends money to these countries to promote their economic development.

Prior trade agreements include [1] the Smoot-Hawley tariff of the 1930s, credited with the creation of or extension of the worldwide depression during this decade and [2] the General Agreement on Tariffs and Trade (GATT), signed by the U.S. and 22 other countries in 1947, after World War II, to promote the liberalization of foreign trade. The World Trade Organization (WTO) represents a negotiations forum dealing with international rules of trade, and the Doha Development Agenda is an initiative of the WTO, focusing on issues of trade and development.

Summary

Different nations have different comparative and absolute advantages and will exploit their particular advantages or disadvantages for their own best interest. Some may choose to interfere with open market mechanisms with tariffs, quotas, and subsidies, either to thwart the efforts from other nations or engage in dumping or infant industry protectionism, and these measures and countermeasures can result in what is referred to as a “trade war.”